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Announcement!

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Smithsonian Deposit

Mr. Henry M. Riley, Baltimore, Md., has assumed the position of Editor of the American Gas Journal, succeeding Mr. Ismar Ginsberg.

Mr. Riley is a graduate of Lehigh University. After graduation he was associated with the Hazard Mfg. Co. of Wilkesbarre, Pa., as Chemist for a short period, after which he became associated with the Consolidated Gas, Electric Light & Power Co. of Baltimore, Md. His upwards of ten years connection with the Baltimore Company saw him concerned chiefly with the operating end of the gas business, serving at different times in the capacity of Assistant Superintendent of Gas Manufacture and Gas Distribution.

For the past six years Mr. Riley has been handling the technical sales of the firm of Riley & Foster of Baltimore and Richmond.

Mr. Ginsberg's extensive consulting practice necessitated his withdrawal as editor. He will retain his connection with the Journal as Associate Editor, giving special attention to the preparation of Industrial Gas Lessons, Progress of Gas Technology, and will contribute articles of a technical and industrial character.

May we not anticipate your hearty cooperation with Mr. Riley in his efforts to be of worthwhile service to you?

AMERICAN GAS JOURNAL

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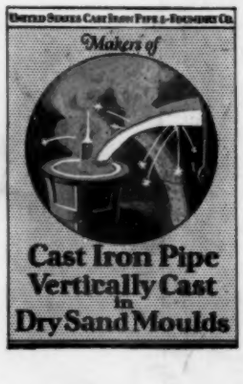

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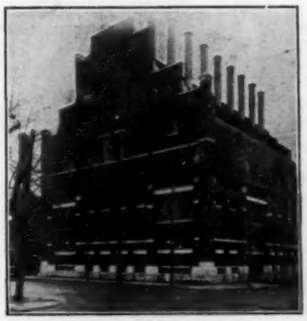

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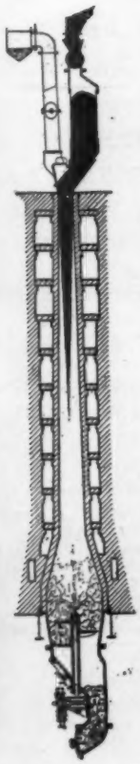

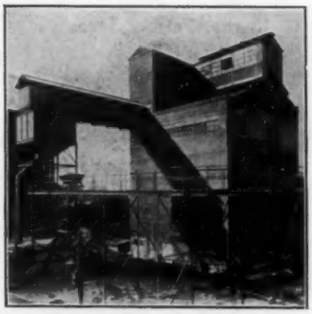

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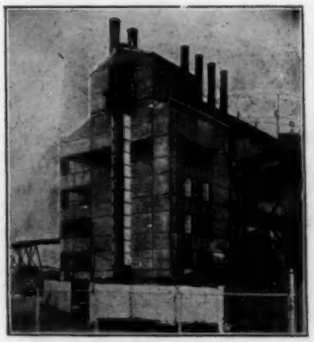

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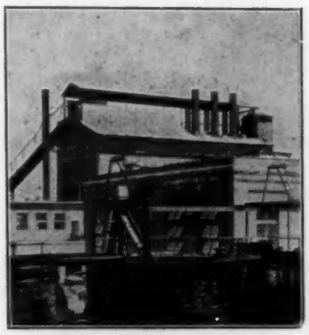

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SIXTY-SEVENTH YEAR

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Insulation

Its value in holding customers

J. E. Bullard

A PERSON not directly connected with the gas industry was talking to a small baker. "Your business is growing," he said; "you haven't very much space and I'd think you would use a gas oven."

"They're too hot," was the baker's reply. "I worked for ten years in a place where they had nothing but gas ovens and I can tell you it sure was uncomfortable on hot summer days. But put your hand on that oven. You can touch it any place. I've got a lot of insulation on that thing and it don't use hardly any coke. I get it warmed up in the morning and it takes scarcely any fuel all the rest of the day. No, it's a lot more comfortable using this oven than those gas ovens I used to work on."

"But can't you get insulated gas ovens that take up less space than this one, that are just as cool and that are a lot cleaner because you don't have to bother with coal and ashes?" he was asked.

"Maybe you can but I'm not going to take any chances with them as long as this oven holds out. Besides those gas ovens I used took an awful lot of gas. I couldn't afford to use them in my business."

Customer Lost Through Lack of Insulation

If all gas appliances were as thoroughly insulated as it is possible to insulate them this baker would now be using gas. The reason why he does not use it is because he is comparing a thoroughly insulated coke fired oven with gas ovens having practically no insulation. It is going to be a long time before he is persuaded to use gas. He may be brought around after the gas company sells his wife an insulated domestic range and he learns from this appliance what can be done with insulation on gas appliances.

The degree to which insulation is used often determines whether or not a sale will be made. A certain concern was using oil in a furnace. That furnace had no insulation. Figures were given the owner of the plant to show that gas could be used as cheaply if not actually at less cost than oil. Gas was sold for the purpose and has given satisfaction.

Gas, however, would not have been used for more than the first month if the greatest amount and the best insulation possible had not been used on the furnace when it was changed over to gas. Today that furnace is comparatively cool on the outside. Practically no heat is being lost into the room to make the operator and others working near the furnace uncomfortable. Insulation has actually done more than gas in this installation for the gas company has secured a large and a very thoroughly satisfied customer.

Low Temperature Appliances Need Insulation

Though the high temperature appliances need much more attention from the insulation point of view, it is the low temperature appliance that often is lost because insulation is neglected. A concern requiring a specially designed appliance in which a temperature a trifle less than a hundred degrees would be carried had it designed by an engineer. The heat was supplied by a gas steam boiler. In every respect except the insulation this appliance seemed to be theoretically perfect but it did not give perfect results. There was so much leakage of heat that the proper circulation could not be maintained. Whether or not gas continues to be used is problematical. Perhaps the electric man will design and build an airtight, thoroughly insulated appliance using electricity to supply the heat. In that case it would probably be used in place of the present gas equipment. After all the main difference between the electrically heated appliances and

the gas appliances that have been sold is the difference in the way insulation has been used. Insulation has overcome a very wide difference in the cost of the two sources of heat wherever electricity has successfully replaced gas.

Cost of Insulation Soon Pays for Itself

If an appliance is used to any great extent, the cost of the very best insulation possible will be paid for by the gas saving made in a month or so. In some cases the right kind of insulation will make it possible to use atmospheric burners where without the insulation pressure burners would be necessary.

One man had need of a temperature higher than is ordinarily generated by atmospheric burners. He was told he would have to use pressure burners. He objected. He did not want the extra equipment pressure would require. He was sure he could design equipment that would give him what he wanted. He was not a gas man but he did know what insulation would do. His work required the use of a good deal of insulating material.

Accordingly he went ahead and built the equipment. He made use of brick and of other insulating material. When the apparatus was finished more space was occupied by the insulation than by the gas part of the equipment. Top, bottom and sides were all completely covered. Gas was turned on and a test made. The atmospheric burners did the work with entire satisfaction. It is true it took somewhat longer to bring up the temperatures than it might have taken with pressure burners but his was a long hour operation and this did not matter so much. The point is that it was the insulation that made the atmospheric burners possible for this job.

Another concern designed and built in its own shop some brass melting furnaces. Special attention was given to the insulation. Originally the idea was as much to make the working quarters more comfortable as it was to save heat because these furnaces had to be installed in a corner of the plant where the very best ventilation could not be provided for the work room. After these furnaces were finally installed they were tried out not only with brass but with other metals. Today they are being used for all emergency jobs regardless of the metal concerned. What has been accomplished in this plant could not be accomplished had less attention been given to the insulation.

In any gas appliance the temperature begins to rise as soon as the gas is lighted. It continues to rise until the heat losses balance the heat generated. If the heat losses are great it naturally requires an amount of gas great enough to balance them at the desired temperature if the appliance is to do the work for which it is designed. If the heat losses are very small much of the gas is saved. If there were no losses at all then only enough gas would have to be used to heat the material placed in the appliance to the desired temperature. In nearly all cases this actual heat used is comparatively small.

But Little Heat Needed to Burn Bread

To bake a loaf of bread for example requires very little actual heat. To offset the losses in an uninsulated oven, however, requires a lot of heat. Most of the heat generated is wasted because no insulation was required. To melt ferrous metals requires a great deal more heat because the temperature is higher, the mass is likely to be materially greater and many times more heat units have to be put into the mass of metal. If no insulation at all is used it may not be possible to apply enough heat to accomplish the result. The better the insulation the less heat has to be generated to reach the desired temperature and the higher the temperature that can be reached.

It is the gas saved that appeals to the man who is paying the bill but it is comfort that appeals to the man who is operating the appliance. The baker mentioned at the beginning of this article is thoroughly prejudiced against gas because he found it so uncomfortable when he worked at ovens that were innocent of any insulation worthy the name. The operator of the furnace that was changed from oil to gas has become an enthusiastic booster for gas because it is so much more comfortable to work at a furnace that is not radiating a tremendous amount of heat out into the room.

The operators of that appliance which maintains an internal temperature of only 100 degrees are going to find it uncomfortable on hot humid days in summer. This will be the case especially with those operators which are working on the side where the working space is confined and where the room ventilation is hardly adequate. These men are not going to be the boosters for gas they would be if the equipment had been sufficiently insulated in the first place.

The One Who Determines Future Use of Gas

In the end it is not the man who pays the gas bill but the man who actually operates the gas heated equipment who determines the future of the use of gas. Some of these men now working as operators will later become owners of business places and shops themselves. If they have found it uncomfortable to use gas, they will look to other sources of heat when they buy equipment. It will not be so much a matter of reason with them as of experience. Because of this fact it is well to give grave attention to the insulation of each and every gas appliance that is installed in any industrial plant. Because of this fact also, it might not be a bad idea to push the sale of insulated oven domestic gas ranges. If a working man finds in his own home that gas heat can be generated in a confined space without heating an entire room, he comes to see the possibilities of gas. It assists in selling him for industrial purposes.

Gas from Refuse Wood

An interesting process

L. P. Lowe

AN APPARATUS for the production of gas from refuse wood under a new method of L. P. Lowe (for which patents are pending) was experimentally installed at Grants Pass, Oregon, in the gas plant of the Southern Oregon Gas Company, the general design and arrangement of which apparatus was substantially in accordance with the accompanying descriptive sketch from which it will be seen that this apparatus can be operated in either of the following methods:

1. By blasting the generator at the bottom of the fuel bed, the products of combustion escaping through the intermediate flue connecting the generator with the super-heater, the producer gas formed during the blasting period being burned at the top of the superheater through which it passes in a downwardly direction to heat the checker brick contained therein, the waste gases escaping through the stack valve, this constituting the heating stage.

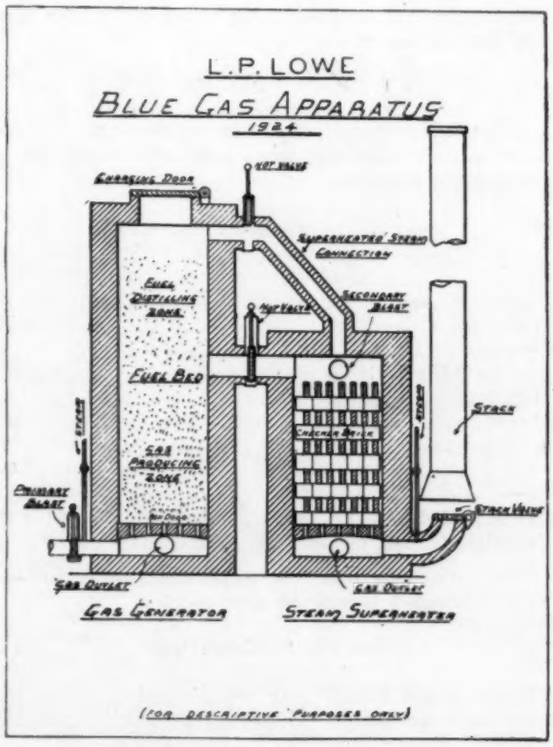
The making stage, through a proper manipulation of the controlling valves, consists of admitting steam into the bottom of the superheater through which it passes in an upwardly direction, thence through the flue connecting the top of the superheater with the top of the generator, the superheated steam then passing downwardly through the entire fuel bed contained in the generator wherein it is converted into fixed gases which escape through an outlet at the bottom of the generator.

2. The heating stage is the same as described next above, following which, through a proper manipulation of the controlling valves, the making stage consists of admitting steam at the bottom of the generator through which it passes upwardly through the entire fuel bed, the mixture of fixed and unfixed gases thus formed escaping through the flue connecting the top of the generator with the top of the superheater, the gases then passing downwardly through the superheater from which they escape through an outlet at the bottom thereof, the superheater thus serving to completely fix the distilled hydrocarbon gases escaping from the fuel contained in the upper portion of the generator.

Refuse wood for the production of gas was experimentally tried in different forms ranging all the way from sawdust to blocks and mixtures thereof, but since the sawdust alone contained too much moisture, probably from 40 to 50 per cent, it was found impracticable to use that material in its wet state and since no means were available for drying the sawdust its use was, perforce, abandoned.

How Best Results Were Obtained

The best results acquired through the brief period in which the apparatus was operated was through the use of refuse wood in the shape of irregular pieces such as box trimmings and sizes which were obtained from the remnants of an old frame mill which had, some years before, burned down. None of the wood used was, however, dry within the meaning of that term for good gas making purposes, and while the block wood was not as wet as the sawdust it nevertheless contained a considerable amount of moisture, the quantity of which was, however, impracticable to determine during the brief period the apparatus was in operation.



Experimental Apparatus Used

Since no means were available of continuously weighing the wood used, nor of measuring the gas produced, no definite information was obtained in that connection, but from a few gas holder tests which were made it was manifest that the apparatus was capable of easily producing the volume of gas for which it was designed, and with the fuel usage claimed, i.e., 30,000 cu. ft. of 300 B. T. U. blue gas per unit (200 cu. ft.) of wood. Had it been feasible to discharge all of the gas as made into the gas holder it could have been accurately measured, but this would have too greatly changed the quality of oil gas in regular use. At Grants Pass there is but one gas holder and that a small one.

On May 27, 1925, certain gas making tests were made for the purpose of obtaining samples of gas for analysis, of which eight were taken under the following conditions as reported by the engineer in charge of the tests, the samples of gas having later been analyzed by the Chemical Department of the University of Oregon. In computing the heating value of the gas the factors used were for unsaturated hydrocarbons, 2000.0; for methane, 1009.0; for hydrogen, 326.2; and for carbon monoxide, 323.5.

Results of Some Tests

Run No. 1—Conditions

Heat: Started blasting generator. Account of very porous condition of fuel bed could open primary blast only 1½ inches. Air pressure under grate 2½ inches water.

In 45 minutes top and bottom of superheater good red heat.

Run: Up through superheater, through top connection, down through generator. Blue gas, burned clear, good volume.

Analysis

	Per Cent.
Carbon Dioxide	12.8
Illuminants	1.6
Oxygen	2.2
Carbon Monoxide	29.7
Methane	10.9
Hydrogen	30.4
Nitrogen, etc.	12.4
	100.0
Calculated B. T. U.	337.2
Calculated Spec. Grav.	.73

The foregoing was when operating in accordance with Method 1 described above.

Run No. 2—Conditions

Heat: Blast 1 inch open on generator. Half way open on superheater. Superheater hot. Surplus of producer gas.

Run: Up through generator, through top connection, down through superheater.

Gas burned rich yellow. Big volume.

Analysis

	Per Cent
Carbon Dioxide	9.5
Illuminants	1.8
Oxygen	1.0
Carbon Monoxide	36.8
Methane	17.5
Hydrogen	23.4
Nitrogen, etc.	10.0
	100.0
Calculated B. T. U.	407.9
Calculated Spec. Grav.	.74

The foregoing was when operating in accordance with Method 2 described above.

Run No. 3—Conditions

Refueled generator. 6 ft. depth replenished. 126 cu. ft. pine blocks.

Heat: Blast 1½ inches open on generator. Air pressure under grate 2½ inches water.

Superheater blast half open. In 20 minutes superheater very hot. Yellow at top. Bright red at bottom.

Run: Up through superheater, through top connection, down through generator.

Gas burned clear with large volume.

Analysis

	Per Cent
Carbon Dioxide	5.7
Illuminants	0.2
Oxygen	3.5
Carbon Monoxide	32.7
Methane	8.8
Hydrogen	39.3
Nitrogen, etc.	9.8
	100.0
Calculated B. T. U.	326.8
Calculated Spec. Grav.	.62

The foregoing was when operating in accordance with Method 1 described above.

Run No. 4—Conditions

Heat: Same settings as previously.

Run: Up through generator, through top connection, down through superheater. 1¼ inches steam valve open one-half turn. 100 lbs. pressure.

Gas burned with yellow flame and great volume.

Analysis

	Per Cent
Carbon Dioxide	11.8
Illuminants	2.1
Oxygen	1.3
Carbon Monoxide	37.5
Methane	12.6
Hydrogen	27.8
Nitrogen, etc.	6.9
	100.0
Calculated B. T. U.	381.1
Calculated Spec. Grav.	.74

The foregoing was when operating in accordance with Method 2 described above.

Run No. 5—Conditions

Heat: Blast. Same settings as previously. Superheater very hot.

Run: Up through superheater, through top connection, down through generator. 1¼-inch steam valve open one-half turn. 100 lbs. pressure.

Gas burned clear with slight reddish tinge. Good volume.

Analysis

	Per Cent
Carbon Dioxide	10.4
Illuminants	0.2
Oxygen	2.6
Carbon Monoxide	31.0
Methane	11.4
Hydrogen	38.0
Nitrogen, etc.	6.4
	100.0
Calculated B. T. U.	343.3
Calculated Spec. Grav.	.64

The foregoing was when operating in accordance with Method 1 described above.

Run No. 6—Conditions

Heat: Same settings as previously.

Run: Up through generator, through top connection, down through superheater. 1¼-inch steam valve open three-quarter turn. 100 lbs. pressure.

Great volume of gas. Bright yellow flame.

Analysis

	Per Cent
Carbon Dioxide	10.0
Illuminants	2.0
Oxygen	2.0
Carbon Monoxide	37.2
Methane	14.3
Hydrogen	21.0
Nitrogen, etc.	13.5
	100.0
Calculated B. T. U.	373.1
Calculated Spec. Grav.	.78

The foregoing was when operating in accordance with Method 2 described above.

Run No. 7—Conditions

Heat: Same settings as previously.

Run: Up through generator, through top connection, down through superheater.

Great volume of gas, yellow flame.

Analysis

	Per Cent
Carbon Dioxide	11.3
Illuminants	2.5
Oxygen	1.1
Carbon Monoxide	34.3
Methane	12.9
Hydrogen	29.3
Nitrogen, etc.	8.6
	100.0
Calculated B. T. U.	386.7
Calculated Spec. Grav.	.72

The foregoing was when operating in accordance with Method 2 described above.

Run No. 8—Conditions

Heat: Same settings as previously. Superheater very hot.

Run: Up through superheater, through top connection, down through generator. 1¼-inch steam valve open one-half turn. 100 lbs. pressure.

Gas burned with blue flame, reddish tinge. Large volume.

Analysis

	Per Cent
Carbon Dioxide	11.3
Illuminants	0.6
Oxygen	2.5
Carbon Monoxide	28.0
Methane	13.3
Hydrogen	41.3
Nitrogen, etc.	3.0
	100.0
Calculated B. T. U.	371.5
Calculated Spec. Grav.	.61

The foregoing was when operating in accordance with Method 2 described above.

Throughout the tests the operating cycle was approximately 5 min. Heats and 5 min. Runs.

Summation of Data and Results

	Operating Method No. 1			Operating Method No. 2				
Run	No. 1 Per Cent	No. 3 Per Cent	No. 5 Per Cent	No. 2 Per Cent	No. 4 Per Cent	No. 6 Per Cent	No. 7 Per Cent	No. 8 Per Cent
CO_2	12.8	5.7	10.4	9.5	11.8	10.0	11.3	11.3
CnH_{2n}	1.6	0.2	0.2	1.8	2.1	2.0	2.5	0.6
O_2	2.2	3.5	2.6	1.0	1.3	2.0	1.1	2.5
CO	29.7	32.7	31.0	36.8	37.5	37.2	34.3	28.0
CH_4	10.9	8.8	11.4	17.5	12.6	14.3	12.9	13.3
H_2	30.4	39.3	38.0	23.4	27.8	21.0	29.3	41.3
N_2, etc.	12.4	9.8	6.4	10.0	6.9	13.5	8.6	3.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Calc. B. T. U.	337.2	326.8	343.3	407.9	381.1	373.1	386.7	371.5
Calc. Spec. Grav.	.73	.62	.64	.74	.74	.78	.72	.61

Run No. 8 is interesting as tending to show that by the time this run was made all of the wood contained in the generator had been substantially converted into charcoal. With unconverted wood in the upper portion of the generator there would, when operating in accordance with Method 2, have been a greater percentage of Illuminants.

To those familiar with the production of gas the foregoing tests will, in a general way, serve to show what can be accomplished in the production of gas from refuse wood by the new Lowe method in connection with which, however, the following should be noted:

The relatively high percentage of residual nitrogen in certain of the analyses shows that before going on runs of such short duration the generator could not have been well purged of the products of combustion resulting during the blasting period.

Had the wood been properly dried before being charged into the generator the percentage of carbon dioxide would have been substantially less.

When operating in accordance with Method 1 it is somewhat of a revelation to note the very considerable amount of methane in the gas, which was probably because of the porous condition of the fuel bed and which permitted a fairly free travel for the gases. With a denser fuel bed it is altogether likely that the methane would have been more completely broken down into its components of carbon and hydrogen with a resultant gas containing more carbon monoxide, more hydrogen, and of somewhat lower B. T. U. content.

In operating in accordance with Method 2 it is manifest that there is, through the upward passage of the hot gases made in the lower portion of the generator, a considerable distillation of the gases contained in the fuel bed in the upper portion of the generator which doubtless accounts for the increased quantity of Illuminants and methane when operating in this manner and which is manifested in the yellow appearance of the burning flame, though why there was an increase in the percentage of the carbon monoxide when so running is not apparent, since it would seem as though there would be a greater percentage of this constituent when operating in accordance with Method 1.

When operating in accordance with Method 1 the gas produced would be of too faint odor for easy detection in the event of leakage, hence it would be necessary to odorize gas so made for which purpose phenyl isocyanide is probably the most satisfactory agent, but when operating in accordance with Method 2 the hydrocarbons distilled from the green fuel in the upper portion of the generator would sufficiently odorize the gas in addition to which, if it were deemed advisable. a considerable amount of oil gas could be concurrently made through the mere admission of oil into the superheater in the customary manner.

Waste Heat Boiler

In an operating plant there would be a waste heat boiler and the fuel would be dried by the waste heat escaping from the apparatus, the fuel, after drying, being automatically and continuously fed into the generator. Devices to accomplish these refinements were, however, too expensive for consideration in connection with the Grant Pass tests.

Other than to say they were quite unexpected, it would serve no useful purpose to recount the reasons for the lack of better operating and testing conditions at Grants Pass, so suffice it to say that it is to be regretted the situation was such that a much more extensive test could not have been made of this method of gas manufacture, and under better and more scientific conditions than were available, and also with fuels of various kinds, including bituminous coal and lignite, but crude and incomplete as were the operations they were nevertheless very helpful and sufficiently conclusive to demonstrate the practicability of using refuse wood in the production of commercial fuel gas, and of which material there are unlimited quantities in certain sections of the country, particularly throughout the Northwest.

Opinions of Engineers in Charge of Tests

While, because of the difficulties surrounding the Grants Pass tests, it was not feasible to prepare a detailed operating report, the following extracts from letters of the engineer in charge may be interesting:

From letter of May 19, 1925:

Spent the morning stabilizing the operation of the plant, during which period made ten or a dozen runs, starting with 4 min. blasts and 3 min. runs and increasing to 5 min. each and then retarding to 3 min. each. In the afternoon stuck to 4 and 4 mins. and toward the end of the afternoon measured the gas by making into the gas holder for five consecutive runs. The gas at all times was apparently of good quality, burned strongly.

From letter of May 26, 1925:

Mr. —— cannot get us the fuel we need. The only fuel available is sawdust kiln dried or green. No hogged fuel, no blocks are available at permissible prices.

The nearest hogged fuel is obtained at Springfield. It will contain from one-third to one-half sawdust, all green, i.e., 40 to 42 per cent moisture.

From letter of May 27, 1925:

Mr. —— came in on the scene at 1.30 P. M. and after witnessing the apparent large production resumed his interest in things. He was promptly full of ideas, redrying sawdust, methods of operation, etc.

Let me repeat a positive pressure blower will work on sawdust.

From letter of May 28, 1925:

Mr. —— came to the plant this afternoon. Okeed purchase of another belt, and when I insisted that he permit me to put the wood gas plant to work tomorrow to take the load he demurred.

Please advise me what to do. You can wager your last dollar on this, this plant can make to exceed 10,000 cu. ft. of gas hourly, and better than 20,000 cu. ft. per unit of dry wood.

Our Future Consumers--Where Are They?--Who Are They?

Jacob B. Jones

EVERYWHERE in these United States of America, there are divisions, sub-divisions, new developments and new home sites.

We are extending our mains out into the patches where we used to pick blackberries, or into the swamp lands where we used to wade for magnolias.

All we need is a map showing curbs and sidewalks, or a prospectus covering dredging operations to make a fill for a town site, and the order goes through to extend our mains.

Now, I am not just sure, but I have every reason to believe, that if the gas men in this country would take an honest-to-goodness census, we severally and collectively own enough 50 by 150 foot lots to take care of all the increased business we can handle for the next five years, even if there was a new home erected on each lot and occupied by a family of four persons.

Dearth of Applications

The records of the several state commissions are singularly free, for the past five years, of applications for main extensions, and this is not true of sections, but it reflects from every part of the country.

On the face of it, this would seem to be a most happy and harmonious state of affairs.

The gas companies would be considered progressive and given credit for serving not only the public they have—but those they hope to have.

However, I am inclining toward the belief that it is time to take account of stock, and possibly devote a little more time to the future consumers we already have with us, rather than to cast so much bread upon the waters, and wait for the future consumer who has been attracted to "our beautiful city" by the chamber of commerce, to bring it back, for I am convinced that much of it will returneth only after many days.

One of Our Future Customers

We do have with us our future consumers, in the person of the fourteen year old school girl, who as a part of her school work, studies domestic science. In but a very few years, she is going to be in charge of her own home, and the percentage is surprisingly large, of those that marry and remain in their home town.

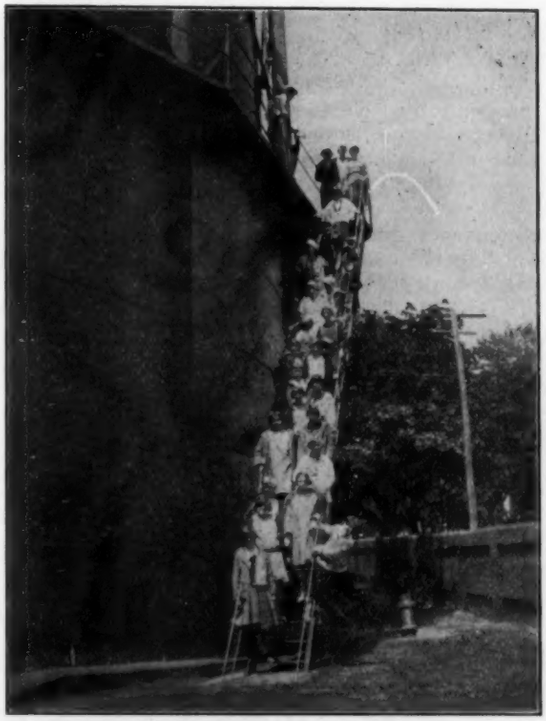
On our lines today, we have a number of these self same persons, who visited us as young girls—and it seems as if it was only day before yesterday.

There is nothing original about this and many gas companies encourage these visitations, and I have no doubt they all could tell the same story.

In our own situation we have been able to secure the active co-operation of the teachers and a visit to the gas plant has been established as an annual event. With an enrollment of 1,200 girls in the Junior High School, we were able to entertain 200 during the past school year, and this we considered a fair percentage.

Impressionistic Age

The age of fourteen is one of lasting impressions, and they ask some great and often times unusual



Some Future Consumers

questions. We have learned that the best way to hold their interest is to trace the progress of gas from the time the coal leaves the mine and is delivered to the plant. Then the various steps through the plant, until it passes the station meter, always carefully avoiding any technical terms.

The station meter is usually regarded by them with some degree of wonder, as they have always thought of gas as some elusive thing that was measured by a tin box on the front cellar wall, but when told that it measures "all of the gas produced," and that our job is to make the several thousand little tin boxes collectively total the amount of gas that the station meter says we produced, they have a new respect for the gas meter.

The last place to be visited are the holders, and it never fails to excite a lot of interest when they go up on the deck, and it is explained to them how the holder has no bottom, but that the water in the tank is really the bottom.

How gas can be put in the holder and taken out at the same time, to them is something by way of a wonder. One of the regular sure fire questions is, "How deep is the water?" and "What would happen if a person fell in."

Topping Off With Snapshots and Candy

At this point, we usually arrange to have some snapshot pictures taken—and of course promise the girls they can each have one. A sample is shown herewith.

Returning to the office, hands are washed—Boy Bob's patted into place—and the friendly compact does community service.

At any rate they all come out smiling and when our own office girls present each visitor with a box of chocolates, they all go away happy.

I am sure that we have found no better or less expensive way of direct advertising, and when a few days later we send copies of the pictures, and they go into the individual homes of the girls, we reach the parents, too.

Most of us parents are interested in our boys and girls, and if the gas company thinks enough of them to give each one a box of candy and a picture as well, we are going to be for them.

Incidentally it is not going to hurt your gas company any to have a few hundred pictures of your plant scattered around, whether they land on the mantelpiece in the front, or lodge in the postcard album.

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Drying Clothes Clean and in Comfort
GAS SERVICE
The gas clothes dryer, installed in your basement, dries clothes sweet and clean no matter what the weather conditions are outside.
The clothes line in the yard is eliminated with its attendant danger to health and troubles of sudden rain and snow, flying dust, smoke and soot from neighboring chimneys.
The nearest Gas Office will gladly supply complete information regarding the modern gas clothes dryer.
Telephone: TRiangle 7500
The Brooklyn Union Gas Company

A Lesson from Life*

IN the locker rooms of a men's organization recently we heard a conversation between an elderly man and a man perhaps twenty years younger which holds a lesson in the ethics of life. It transpired while a group of us were changing into "gym" attire.

The younger of the two men spoke up good naturedly to the older one, a man past middle age, who had the locker next to him, and said: "Say, I don't think you're such a terrible person after all, but for over twenty years I have actually hated the very sight of you."

"Well, I don't know what you are driving at, Sir, the elderly gentleman answered, but let's hear the worst." We expected to hear a "kidding" match but we were wrong.

"Now that the ice is broken," continued the young man, "I feel that I ought to unburden myself of a hatred that I have harbored since childhood. Though its inception was not my fault. I am sure I will feel better to erase it from my memory. Then he went on with the story.

"Over twenty years ago, when I was a very small boy," he continued, I was one day delivering my dad's lunch to him at a certain factory. I was passing your store, in front of which a miscellaneous variety of fresh fruits was on display, when I noticed two boys just ahead of me grab some oranges and 'beat it' around the corner and out of sight."

"At that very instant, you rushed out and evidently mistaking me for the guilty one, you grabbed me and took me by force into a back room of your place and there with others, catechised me and put me through a 'third degree' which thoroughly scared and humiliated me. What made me feel the injustice of it all most keenly was that you threatened to lay the whole matter before my parents and the police. And while I was not guilty, I could sense, young as I was, the futility of ever successfully proving my innocence. So, in my boy's mind, I hated you right from the start, and that hate has come to the surface on each one of the scores and scores of times I have seen you during the intervening twenty years. It has been quite a terrible thing, slight as it may have seemed to you then. But, today, I am wiping off the slate. Put 'er there." And they shook hands

It is not necessary perhaps to state that the older man, who also remembered the incident, mentioned the great losses he used to sustain through petty pilfering, and spoke of his attempt to scare into future goodness the "kids" that were a real pest to him. His brief for himself was quite all right, but he made the fatal mistake of accusing the wrong boy.

How careful we should be to make sure of being right whenever we feel that we have cause to accuse or to criticise anyone, especially a child.

In the absence of dependable proof we must exercise patience, tolerance and charity. Without these virtues life would be robbed of much that is most worth while.

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* From the December issue of "Gas & Electric News"—Rochester Gas & Electric Corp.

Finance and Public Relations*

Channing H. Cox

Vice-President of First National Bank of Boston

SINCE receipt of your invitation to come here, I have been interested to learn that natural gas was known to the Greeks, who thought it the breath of a god; that it was piped through bamboo tubes and used as an illuminant in China centuries ago; that the first gas company was organized in London in 1812; and that the first company in the United States was formed in Baltimore in 1816. All this is interesting, but it is most impressive to be confronted with the claim of your association that heat is the basis of all production, and particularly, industrial production, and that gas is the most efficient and cleanest substitute for coal as a heating medium. It is now always recognized that the gas industry is today one of the largest and most important in the country, with a yearly output of more than 500 billions cubic feet and a plant and equipment value of over $4,000,000,000. The history and earning records of the gas industry date back more than a century, and during most of that time, the scurities of the leading gas companies have held high position in the markets of the world. The importance of gas in our daily lives is recognized in the regulatory powers of state commissions over distributing companies. The banker and investor are impressed that the number of gas companies in receivership is negligible, amounting to only 1,015 meters in 1925 out of more than 10,000,000 in service that year, or about one one-hundredth of one per cent.

Predict Sales Will Triple in Twenty-five Years

Students of the gas industry predict that sales will be tripled in the next twenty-five years. However correct that prediction, it is certain that the increasing use of gas for industrial and commercial purposes —for heating homes and for providing refrigeration —will make the gas industry of even greater importance still. Such a large and rapidly growing industry presents problems that require careful study, not alone by those directly engaged in the business, but by bankers and investors, and by the public in general, which is each year becoming a larger consumer.

The financing of gas utilities presents in general no problems differing radically from those to be found in other types of public service corporations. Indeed, in many cases we find operating companies doing a combined electric light and power and gas business, or a holding company controlling subsidiaries engaged in different branches of the industry and often doing part or all of the financing required by these units.

The exact form or method by which funds shall be raised depends obviously on a number of factors, as, for example, the general business situation, the condition of the money market, and the financial position of the company requiring funds. It is, however, axiomatic that the utility company in normal times with its slower capital turnover and its greater stability of income may more safely and with less expense rely to a greater extent on bonds than can the industrial corporation. On the other hand, the industrial concern, because of its greater freedom from regulation and consequent chance for higher earnings may finance more easily through the reinvestment of surplus income into the business. Unfortunately, American financial history has too often recorded cases where both forms of enterprise have through necessity or for less excusable reasons relied too heavily on their borrowing power with disastrous consequences. A much more sound financial policy to be followed by the utility corporation is that announced not long ago by one of our country's largest gas and electric companies—to finance their future requirements 50 per cent by bonds, 25 per cent by preferred stock, and 25 per cent by common stock.

Difficulties Attending Maintenance of Proper Capital Structure

Conditions are not always, however, such as to permit even the best managed corporations to preserve at all times a well balanced capital structure. Obligations may mature and expansion become necessary at periods when long term bonds can only be floated, if at all, at extremely disadvantageous rates, or when the company's stock cannot be marketed. At such times, corporations would better issue short time notes or bonds on the best terms possible in the hope that at or before their maturity they can be refunded by stock or bonds under more favorable conditions. The "discovery" of the so-called mortgage has simplified to a great extent the financial problems of many utility corporations. Under the old system, a first mortgage issue at a low coupon rate may have been brought out with a limited amount of bonds authorized. When the authorized amount of bonds had been issued, the company was often forced to sell second mortgage bonds at a high rate of interest, particularly when the first mortgage covered all property owned by the company or to be acquired by it in the future. The open-end mortgage obviates this difficulty by providing for an unlimited number of bonds of different series, varying maturities, and varying interest rates, such bonds to be brought out only for, say, 75 per cent of the cost of additions or for refunding purposes, and then only when net earnings are for twelve months preceding any issue twice interest charges on the funded debt including the bonds which it is proposed to issue.

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* Delivered at Convention of American Gas Association, Atlantic City, N. J., Thursday morning, October 14, 1926.

Under the open-end mortgage, when interest rates are high, short term bonds or bonds with a redemption feature may be issued, later to be refunded by sale of stock or lower coupon rate bonds when conditions in the money market appear to be more propitious.

Some gas companies maintain a stronger cash position than is usually deemed necessary for public utility companies in order to be able to finance themselves when interest rates are temporarily high or to take advantage of low prices for quantity lots of materials and supplies whenever opportunity affords.

Sale of Stock to Employees and Customers

Many companies have found a source of capital supply among customers and employees, very often through the sale of preferred stock. Frequently this step has been taken not because the company found it impossible to secure funds in the usual manner but from a desire to foster good will with these interested parties. Obviously this method of financing should be employed only when the form of security is at least reasonably safe and the company can be reasonably certain of paying dividends in foul weather as well as in fair. Otherwise, instead of good will, an active and most damaging ill will is sure to be engendered. Rightly employed, this method provides a satisfactory cushion for future bond issues.

A review of gas company financing in the past few years reveals a varying degree of success on the part of these corporations in dealing with their financial problems. During the war a combination of unfavorable factors brought about one of the most serious situations which these companies have ever been forced to face. The high cost of coal and other materials, the difficulty of securing relief in the way of increased rates for the service rendered, and the high going rates for money all militated against the industry. Under the circumstances, it is not surprising to find that Moody's table of average prices for gas company bonds shows a decline from 101.04 in 1916 to a low of 75.81 in 1920. One of the largest of the companies found it necessary in 1920 to issue notes at 7 per cent and 8 per cent and even then could market them only by depositing as additional security the most valuable collateral upon which it could lay its hands. Naturally financing by stock was then out of the question.

Progress since that time, though uneven, has been marked. The company just referred to has been able to retire the high coupon obligations issued in 1920 by stock and to finance an expansion program by a long term issue at an extremely low rate. This accomplishment has, of course, been made possible by more equitable rates, lower cost of fuel, and a more favorable money market. Other companies are still hampered by a top-story financial structure due in many cases to the failure of public service commissions to grant reasonable rates.

Should Be Simple to Obtain Funds

At the present time, where the essentials outlined above have been secured, it should be simple for a gas company to obtain needed funds on advantageous terms and this statement should prove true of the small as well as the large company. The First National Corporation, connected with my own bank, The First National Bank of Boston, recently sold the obligations of a small gas company serving a section of suburban Boston at a price to yield less than 5 per cent. I doubt very much whether it would have been possible, even if it had been advisable, for an industrial concern of similar size to have secured funds in this manner. In this case, however, with steady and favorable earnings and the supervision of a public service commission which has consistently allowed a reasonable return on the investment, it was possible for a responsible financial institution to offer these notes to its customers as high grade obligations. The difficulty of one of the largest companies in securing capital in 1920, contrasted with the case of a small company in securing funds this year, shows the greatly enhanced position of gas companies today.

On the Eve of Important Developments

With the gas industry apparently on the eve of further important developments in the industrial field and in refrigeration, not to mention its increasing use for domestic heating and cooking, more and more capital will undoubtedly be required. There should be no difficulty in obtaining these funds; bankers and investors alike will, in fact, welcome the opportunity to participate in so sound an industry, provided only that the essentials of wise financial management are observed.

Must Cultivate Good-Will of Patrons

Any commercial enterprise which offers commodities for sale must cultivate the good will of those it seeks as patrons. The public trades at stores where all things considered it feels it is given the fairest treatment. The American people are willing to be led, but they do not like to be driven. A public utility usually has a monopoly of the service which it renders to a particular community. The service rendered is one that is essential to the welfare and comfort of most of the residents of that community, and they are forced to purchase their light, heat, communication and transportation from the one company that serves them in that field. But no matter how assiduously the company may try to avoid misunderstandings and to deal fairly, its consumers, nevertheless, feel that they have little freedom of choice, and the officials of even the best conducted public utility frequently find that over night a storm of criticisms has broken on their heads which they in no wise foresaw. The element of public good will is one of the most important that enters into the successful management of any public utility and particularly is this true of gas companies.

Fortunately the officials of most public utilities fully appreciate this situation, and have striven hard and successfully to establish and maintain proper relations with the public. In my own experience I have seen great changes in the manner of seeking or opposing legislation affecting public utility companies. Not so many years ago, if a strike measure were aimed at a public service company, lawyers would be employed to appear before legislative committees, and legislative agents would be hired to work with individual legislators. Now, when a company seeks a proper privilege, some responsible official usually goes before the tribunal, and he is not afraid to state what his company seeks, and gives ample reasons why his plea should be granted. It was long considered good political capital to assail public service companies. I remember the incident of an able lawyer who was nominated for the legislature. He had honorably served a gas company as an attorney. All his opponent had to do in the campaign was to mail a circular to the constituency which read substantially as follows: "My opponent is attorney for the gas company. On election morning all the officers of the gas company will come out early and vote for him. Would it not be a good plan for the consumers to come out that morning and vote for me? I promise to oppose everything the gas company wants."

These baiters of honestly conducted corporations went too far. They injured the service and they made it impossible to attract new capital to supply improvements and extensions to plant and equipment. Companies conducted intelligent publicity campaigns and the people became suspicious of the agitator who protested too much. People are becoming more accustomed to public service companies. More and more they are acquiring securities of such companies, or perhaps the savings bank where they deposit, or the company in which they are insured, or their fraternal organization may carry such investments. They realize that the laborer is worthy of his hire, and that the public utility which is rendering honest and useful service is entitled to a fair return of its capital outlay.

A Specific Case

Recently I followed a rate case which was of the greatest interest to a large section of the public. A utility company was seeking an increase in rates. The public was immediately aroused. As the hearings progressed, the president of the company took the stand and in several days of examination and cross examination he showed such a grasp of the affairs of his company, and stated his case so convincingly that the public began to think, became impressed with the fact that there were two sides to the question, and it became possible to have a fair consideration of the case free from prejudice and hostility.

The people are coming to see that the fixing of rates is a matter that requires the study of trained men who will sit as judges without the thought of political consequences and they realize that legislatures are not the proper tribunals to deal with such intricate questions. As a whole, the members of our public utility commissions are men of character and capacity. They are developing a body of sound precedents. They are trying to do right by the public and by the companies under their supervision. Our courts have shown their power to prevent confiscation of property. It should not be forgotten, however, that the men who sit on our commissions and the judges who sit in our courts are merely human beings. Cases could be multiplied where even our courts of highest authority have rendered different decisions under similar states of facts. They have apparently modified their views in response to clearly defined intelligent public opinion. If our courts are responsive to right public sentiment, how natural to find that members of public commissions, state and municipal officials, unconsciously perhaps weighing political consequences, should strive to please the public.

How Supporting Public Sentiment Can Be Secured

Since gas companies are so dependent upon a supporting public sentiment, how can this be best secured? You, who are in the business, know better than anyone. To an outsider it would seem that the utmost care should be used in all the points of contact with the public. The higher executives must know their business and they must stand ready to meet public officials directly. They must not attempt long range communication through intermediaries. It is of no less importance that all along the line from president to office boy there be a spirit of service, an evidence of desire to win approbation. The meter readers going to homes twelves times a year, the persons who receive applications, the tellers at the cashier's windows, the men who install new apparatus, the bill collectors and those who receive complaints, all of these employees represent the company in its contacts with the public, and they have vast power to make a friendly or a hostile atmosphere. Not long ago I found on my desk a list of printed suggestions as to how to conduct a conversation over the telephone. It was then suggested that our most pleasing tone of voice be employed. Somewhat annoyed, fearing that it had been necessary to single me out of an organization of more than one thousand, I learned on inquiry that our office manager had given these suggestions to everyone in the bank. Already we have heard favorable comments upon the courtesy that is extended our customers over the telephone.

The public soon comes to know whether a large institution is sincere or not in its professions that it strives to give the largest measure of service possible. Recently the president of a bank in Pennsylvania wrote us that he had called at our bank in Boston. Without disclosing his identity, he told an attendant that he would like to look around our institution. Whereupon he was shown into every nook and corner, until finally he had to call a halt.

He was so pleased that he thought we ought to know of the attention he had received, and he made us his Boston correspondent. The attendant had done what he was expected to do, but the fact that he had done it with such good will has brought us business which we desired, but which we otherwise might not have obtained.

In the treatment of its own employees, a gas company, as in fact any other company, has an opportunity to demonstrate whether it is "soulless" or whether it is an aggregation of human beings who derive joy and satisfaction in the doing of daily work, and who are bound together in a spirit of cooperation.

Employment in a public utility may present an ideal of service that is most appealing. America's public utility companies are fighting a never ending war against fire, flood and storm to maintain continuous service. Somewhere brave men are on guard who know that no excuse can be accepted, but that the service must go on. Can there be finer incentive to high endeavor than was recently presented to the employees of the public service companies of Miami? Who would not have liked a part in restoring gas mains so that the people of that stricken city could be fed, or restoring electric or power service so that the community could be lighted and its industry revived, or to repair telephones so that communication might be reestablished between a devastated city and a sympathetic nation? At such a time every day work becomes glorified. That is the ideal which all public utility companies should strive to inspire in all their officials and employees for every day routine work. When such an ideal is attained, public utility companies will have established correct public relations, and they will experience no difficulty in securing financial support for their requirements.

"Big" Men Must Keep Themselves Fit

When some pessimist bewails the tendency of the present times, I like to think of the higher standards of honor and integrity that are found in the general business life of today. Men of large responsibilities realize that they must keep themselves fit. They desire to have the good opinions of their fellowmen. They like to make good financial showing, but they prefer even more to have their institution well regarded.

Willingly they dedicate part of their time to outside organizations designed for the betterment of community life. In our complex civilization we realize how helpless we are as individuals, and how dependent we are upon the efforts of the thousands with whom we dwell. As we look to the future with its bright promise of golden opportunity let us be glad that in this country there is room for all and that honest toil is the noblest service.

Those who have gone before have done their part and we glory in their accomplishments. But we live in the present. Grave problems present their challenge. We shall solve them. We shall keep faith with the past. Let us rejoice that we live today in the greatest country which the eyes of men have beheld, the United States of America.

DETERMINATION OF NAPHTHALENE IN GAS

NAPHTHALENE in gas is generally determined by passing the gas through a saturated solution of picric acid which results in the deposition of a soluble naphthalene picrate. This precipitate is however contaminated with 25 to 50 per cent of indene picrate.

A method has been devised for accurate determination of naphthalene wherein no special technical skill is required. This consists in passing the gas through the requisite amount of acetic acid contained in two spiral wash bottles, followed by an ordinary wash bottle containing 50 c.c. of saturated picric acid, to act as a catch. The gas is then metered. After ten cubic feet have passed, the gas is shut off and the bottles are disconnected. The contents of the acetic acid bottles are mixed in a beaker, 33 per cent acetic acid being used for washing. A slight excess of bromine dissolved in acetic acid is then added; the liquid will have a slight permanent yellow color. The solution is then poured with stirring, into 500 c.c. of picric acid solution which contains the 50 c.c. of acid used in the catch bottle in the test. After keeping for half an hour the precipitate is filtered off on a Gooch crucible and washed with about 30 c.c. of 0.2 per cent picric acid solution sucking the crucible as dry as possible after every addition of the washing liquid.

The precipitate is then transferred by a jet of hot water to a beaker, 100 c.c. of distilled water are added, and the solution is boiled for 10 minutes. The hot liquid is then titrated with 0-1N caustic soda using methyl red as indicator. (Of a very large number of indicators tried for this titration, methyl red proved to be by far the sharpest). 1 c.c. of 0-1N-alkali=0-0128 g. of naphthalene.

The method proved to be very accurate. The following are a few of the results obtained:

	Naphthalene taken	Indene taken	Naphthalene found
1.	0-0568 g.	0-0406 g.	0-0553 g.
2.	0-0282 g.	0-0380 g.	0-0270 g.
3.	0-0756 g.	0-0242 g.	0-0750 g.
4.	0-1080 g.	0-0521 g.	0-1040 g.

(Journal of the Society of Chemical Industry, 1926, pages 205-6T).

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APPLICATION OF PSYCHOLOGY TO BIG BUSINESS

Big business is turning to specialists of psychology and instructing their people who come in contact with the public. For the last two weeks Pauline Dunstan Beldon, who has lectured before the Peoples Gas Light Company of Chicago, has talked to the employees of the Brooklyn Union Gas Company. Her last two lectures have been on personality, and have been of great benefit to the personnel of The Brooklyn Union Gas Company. There are 150 students in her class

The lecturer has classified all types of people into three classes, namely: mental, emotive and vital. In her talk she explained to them the characteristics of the mental, emotive and vital personalities, and some of those in the class recognized their own individuality in the description given by the speaker.

Besides being very interesting, Pauline Dunstan Beldon has a strikingly direct personality of her own.

As The Journal Views It

PROPER DIAGNOSIS NECESSARY TO EFFECT CURE

It has recently been announced that Mr. J. E. Aldred, chairman of the board, Consolidated Gas, Electric Light & Power Co. of Baltimore, has made a contribution of one hundred thousand dollars to the Massachusetts Institute of Technology. This sum is to be used in promoting and furthering the study and solution of divers municipal problems. A very timely effort in the right direction, in our opinion.

To date there have been proposed and tried out a conglomeration of nostrums endeavoring to cure what we might style, "High Municipal Blood Pressure." And what with the altogether rapid and gigantic growth of our cities there have arisen problems and ills of a quite serious sort—so grave in fact that proper thinking men, at times, almost despair of holding the same within any reasonable bounds. Nevertheless, as is usually the case, a great and officious horde of "quacks" and "snake oil vendors" have rushed gleefully forth to ply the ailing patient with their curealls—doses neither potent nor patentable but oft-times powerfully poisonous.

In the meantime the pimple of ailment has passed, long since, through the stage of being a wart and is now of a size which will well allow us to apply the name of tumor thereto.

We repeat: our traffic problems have just about gotten out of hand; our zoning difficulties are a thumping big job in themselves, to mention nothing of the complex deviltries brought into existence by way of underground municipal construction—subways, water and gas mains, etc., etc.

We hold that the economic future of our country and the world at large, for that matter, lies in the hands of the trained engineer and scientist. Big men of business and industry—particularly self-made men—are increasingly coming to this viewpoint.

Mr. J. E. Aldred is a self-made man and it strikes us that he is taking a short and efficient cut toward the cure of our permanent ills. He is a man who has done some really big things of development nature in life and in the doing has depended on a great wealth of engineering graduates. He has clearly shown by his generous gift to Boston Tech. that no lasting cure can be brought to our more or less suffering municipalities until a proper diagnosis is made. Obviously the correct treatment will follow hard on the heels of such diagnosis.

Mr. Aldred is to be congratulated, but more so are our various cities and communities who will profit most therefrom.

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WHAT ABOUT IT?

We note in a recent editorial in the Chicago Tribune that some little while back a hunt for surplus furniture was made in the Interior Building in Washington and some thirty two-ton trucks were loaded up with material to the value of $8,000. Incidentally, a great deal of extra office space was gained. Followed later another cleanup and these supplies were brought to light: 10,000 pencils, 5,000 penholders, 2,000 boxes of paper clips, 250 inkwells,, etc. All surplus material, mark you.

The foregoing reminds us that many office corps have gotten into the habit of ordering materials and supplies apparently from a superfluity of unconscious gluttony. At this season of the year most of us are thinking—even if ever so slyly—of how well a new desk would look in front of us. Moreover, we show a very hugeous philanthropy toward our printer and stationer. Further, salesmen sally forth on their first trips of the year with "three for fifty" perched between their teeth and uptilted at a most prosperous appearing angle.

To all of the above we might repeat an axiomatic statement that you cannot eat your cake and have it too. Superfluous desks, stationery and perfectos must be paid for. It can only further inflate overhead and running expenses. With inflation comes a sagging in profits and the moving further back of prospective increases in salaries and the like.

"Coolidge economy" has been criticized by some people, but the above would indicate we might take a lesson therefrom and apply the same to business as well as government affairs.

House Heating in New England

Gas used in 1,300 homes

The people of New England are rapidly turning to gas for fuel, partly because of the rising cost of coal, but particularly on account of the greater comfort and convenience which an easily-controlled fuel gives.

A survey just made of some 50 gas companies in the five New England states—Massachusetts, Maine, New Hampshire, Rhode Isand and Vermont—shows that 1,303 customers are now using gas to heat their houses. Hot air, hot water and steam boilers are used.

Gas companies of Massachusetts report 874 installations, Rhode Island 362, New Hampshire 61, Vermont 6, and some are under consideration in Maine where house heating rates have just been approved by the commission. The City of Haverhill, Mass., leads with 167; Pawtucket, R. I., has 150; Boston, Mass., 138; Woonsocket, R. I., 110; and Providence, R. I., 100.

Flat Rate Unfair

One of the greatest obstacles heretofore in using gas for this purpose has been the old flat rate which made it necessary for the gas company to sell gas to all domestic consumers at the same rate irrespective of the quantity used. That this rate was unfair to all consumers has been well known to gas companies and public service commissions for many years, but the reluctance of the public to make a change has been a stumbling block in the development of heating and industrial use of gas.

Experience has shown that it costs the gas company a certain amount of "out of pocket" expenditure to serve a customer whether the customer uses gas or not, these costs being made up of interest on investment necessary for service and the costs of meter reading, billing, etc., which are constant throughout the year.

Startling Conditions Shown

Surveys made by leading gas companies several years ago as to the amount of gas consumed by their various customers showed some startling conditions. It was found that under the flat rate approximately 50 per cent of their customers were served at a loss, and of these 20 per cent used less than one dollar's worth of gas per year. It also showed that approximately three-fourths of their customers used only enough gas to pay for the bare cost of serving them, without enabling the company to earn any return on the amount of money which had been invested in the business. In other words, about one-fourth of their customers used a sufficient amount of gas to enable the company to earn a return on its property. It was also shown by these surveys that the smaller consumers of gas are not (as some believe) the poor, but rather the fairly well-to-do people who use gas only incidentally. New rates are based upon the theory that each customer should at least pay the actual cost of serving him plus a charge for the gas used, which decreases in rate as the quantity consumed increases.

Demands Concentrated

The demands of the domestic customers of the gas company are not spread evenly throughout the 24 hours, but are concentrated in the morning, at noon and at night when the home meals are being cooked. This makes it necessary to employ a much larger amount of capital to provide for these heavy demands over short periods than would be the case if the full capacity of the plant could be utilized more evenly through the 24 hours.

Gas house heating provides such a load, as it is spread out over the whole 24 hours for about 7 months of the year, the largest demand coming during the months of January and February. The industrial load also provides for longer use, running from 9 to 16 hours per day and in some cases throughout the full 24 hours.

Experience has shown that a graduated rate based on the actual cost of serving each customer is fairer and results in greater use of gas at lower costs to the consumer.

Special Rates for House Heating

The survey recently made shows that of these 50 companies reporting, 37 have established a special rate for house heating and many of them have a similar rate for industrial use. The rates for house heating range from as low as 55 cents per thousand to $1.00 per thousand cubic feet of gas used, depending upon the amount. In almost all cases a service charge is included to cover the cost of serving each customer, and the cost of the gas itself decreases as the amount used increases.

Insulation Important

This use of gas for house heating has also brought particular attention to the insulation of homes against heat losses, and 23 of these 50 companies are working with architects in designing new houses to provide in their construction the proper insulation to save in the cost of heating each year. Some of these systems of insulation do not add to the actual cost of construction of the building, while others may cost a few hundred dollars more than for an uninsulated house, but, in any event, insulation results in a smaller size and lower cost heating plant being used, which more than offsets any increased cost. The savings in fuel costs in heating an uninsulated house vary between 25 per cent to 40 per cent, depending upon the character and efficiency of the particular insulation used. Even if the cost were greater, this large saving in fuel would pay for it in a very short time.

(Continued on page 42)

OPPORTUNITIES OF REAL SERVICE

"Food," according to Mrs. Mary Harris Hoar of Washington Gas Lt. Co., "being the foundation of health means, we must learn more and more about it, and this help given by 'Home Service Women' of gas companies enables the housewife to 'put it over,' and in a broad sense is making home life more desirable every day.

"One of the outstanding features in this work is teaching economy in buying, also conservation of foods; the art of compiling palatable dishes of left-overs, the outlook is then a great saving in both time and money, teaching preparation of foods in a highly scientific manner with less work.

"Just now I am conducting some very interesting classes at one of the small suburban plants where we have some real 'get together meetings.' where we talk over and solve the housewives' problems—not only in cooking but in many of the general household difficulties—it makes one feel sort of good to know we can be of real service to humanity.

"To make food attractive to the eye is a great aid to digestion, so we mix into our food combinations a lot of psychology in both form and color.

"Labor connected with the 'Art of Cooking' has been greatly minimized by the 'oven heat control' and perfection in cooking is the result.

"The housewife is released from kitchen bondage by its use.

Follow-Up on Appliances

"Every appliance should have a follow-up at once after installation to assure proper consumption and also to familiarize the housewife with her new appliance before she may either through faulty installation or misunderstanding become dissatisfied for it's always hard to gain back her confidence.

"The follow-up on appliances gives the 'Home Service Woman' some definite daily task, which spells higher efficiency than going aimlessly at the job which is quite unproductive.

"Graciousness and real service is the vital part of the daily operation of the Home Service Woman's job.

"This Home Service Work is of major benefit to any company, and these workers have edged their way into the very hearts of the housewives until today she is lost without their help.

"We have just closed a most remarkable sale on 'Gas Ranges' with oven heat control. It was a sale where the 'coin language' was spoken and many recognized it and availed themselves of the opportunity of 'getting in on it.'

"At our plant we realize it is becoming difficult to sell ranges today minus the 'heat control'; everyone seems completely sold on this device; this is a result of our systematic education along this line.

"The few housewives who hesitate to pay at purchase of range the extra for heat control invariably return to see if they can have it installed on their range and are much disappointed to find it cannot be done.

"I suggest to housewives who do not have the heat control on range to use an oven thermometer to measure the heat for cooking perfection.

"Our 'Home Service Department' is one of the busiest at the plant, having much new suburban territory to cover and lots of new main stuff to look after—these new consumers having been using coal, coal-oil and wood stoves—few ever having used gas before—so our field is a keenly interesting one, where we find much missionary work to be done, also much appreciation shown, and we are looking forward to a big harvest in our work for 1927."

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BOY SCOUTS TAUGHT COOKING

THE Boy Scouts of Queens are expert cooks, as a result of a course in camp cookery given by the Home Service Division of the Brooklyn Union Gas Company. The boys have come each Saturday morning for six weeks to the Home Service auditorium of the Newtown Gas Company at Grand Street and Queens Boulevard. There they have prepared—and eaten—all the well-known camp dishes, from hunter's stew and hot dogs to johnny cake.

The principles of nutrition have been stressed as well as the correct methods of cookery. The Scouts can now cook at home by gas or over a camp fire with perfect ease, for they have supplemented their work in class by practical cooking at home and on the road.

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HINTS FOR THE HOUSEWIFE

We again call your attention to a terse but fairly comprehensive little booklet published by the New England Bureau of Public Service Information, Boston, with the title "Hints for the Housewife."

In the same one will find some much wanted information along the line of the proper gas flame adjustment, how to keep appliances clean, as well as the selection of gas saving utensils and a number of other bits of information that are generally difficult to obtain in a handy, concise form.

One very interesting and important section deals with the proper temperatures to be maintained in the oven for various food items to be cooked.

The booklet may be obtained gratis by addressing the above company at 24 Milk street, Boston, Mass.

Mr. Audience, Your Attention, Please!

Edith Yeager

NERO sought it when he burned a city. Nations have fought for it for countless centuries and gone to oblivion with scarcely a record of their struggle. Artists in all professions have given a perfect effort through travail of tears and strife to hold it for an evasive moment. The great, vast, fast moving businesses of today demand it. They spend millions of dollars to get it, and keep spending to hold it. They must have their audience if they would cast ever so faint a shadow on the sun-drenched walls of trade.

Tremendous as has been the effort of thousands in the past and present to command a world audience, it is closely paralleled in the smaller but no less vital effort of Home Service to seek this same sustaining power for itself. Without an audience the greatest genius will fail, the greatest cause perish for lack of support. Without an audience Home Service may strive in vain.

Home Service departments have met and will always have to meet the problem of an audience. As the value of Home Service becomes recognized and the need for it felt more strongly in the home, the problem will simplify itself materially, but it will ever be present. Home Service will always be new to someone. Especially is this so in the first year of the department's existence, when it is struggling to find itself and its public. Through the Home Service Director comes to her new department with a broad experience, "equal to her job" in every essential, her problems become utterly perplexing when she seeks an audience before whom to present this brand new service.

It is became each new Home Service project must be approached and served with rules which are the same in substance but totally different in application that the director finds it so difficult to start her work and to find herself. It is the new application of these old rules, coupled with a fine, insistent instilling of faith in the customer for the company's particular need that will eventually bring dependable audiences. The 'phone will be kept busily humming as the need for Home Service is made clear to eager and satisfied customers. They will build for substantial good-will and better public relations to an appreciable degree.

Should Not Be Disappointed by Small Audience

Because a company has spent a few hundreds or even thousands of dollars on publicity during Home Service's year or more of existence, is no reason to be disappointed by a small audience at the first few lectures. The public has been fooled many times; it is slow to believe that what a utility company offers free of cost is indeed a real, honest, helpful service.

The size of a Home Service audience is almost entirely a reflection of the personality and goodwill of the director and her assistants, who must be self-sufficient, students of their own problems and women capable of projecting their own personalities to its greatest advantage. Publicity helps materially, it is true, to call together a few of the curious. But individual effort of everyone employed in a Home Service department is the big factor in changing guests from mere curiosity seekers to a dependable body of followers who will eventually bring exceptional returns to the company in the form of good-will, improved sales and in a general high standard of cooperation between the company and public.

For example, Westchester Lighting Company's field of operation covers more than four hundred square miles. Its twelve Home Service Directors are known as assistants to the director-in-charge but are actually directors in their districts. The directors are given domestic science lecture demonstrations by Miss Margaret Hutton, B.S. These demonstrations are used by them daily, in the demonstration kitchens on the main floor of their respective offices throughout the county.

There are various ways of securing an audience for lecture demonstrations but they are all comparatively easy when compared with the work of securing even an audience of one for "daily" demonstrations. To be sure, a generous advertising campaign properly directed can do much to boost attendance. But the expense involved does not always warrant the use of this method. On the average, the "daily" audience will be attracted solely from customers who call at district offices for the definite purpose of paying bills or inspecting appliances. These persons are bent upon attending to their business quickly and seldom have the time or desire to tarry at a demonstration.

How to claim their vagrant attention and hold it so as to send them away counting the time well-spent, is peculiarly and properly the business of the director, whoever she may be. And right here is one of the "old rules with a slightly different application." At all the especially advertised lecture demonstrations that occur once a week, the names and addresses of guests are taken and filed. From the women whose names are on this mailing list come the majority-audiences for all future lectures. Should this system be applied to the "daily" demonstration the director would take the name of each person every day who may stop at her kitchen. This list she would use as a weekly mailing list. The director might well address her guests in this manner.

Use of Postals

"I should like to send you a postal of my demonstration of next week. I am certain you will find it very interesting. Will you give me your name and address please?"

Each week the director would send postals announcing her demonstration for the following week to the list of names she has obtained.

Dear Mrs. B—:

I promised to send you a card about my Home Service Demonstration "Cookies" which will he held from 2 to 4.30 each day during the week of December 25, in the Main Floor kitchen of our Company office.

I am very anxious to have you visit us. Please come, and if possible, bring a friend with you.

Best Wishes,
SALLY JONES,
Director Home Service.

This first postal should be written by the director. The postals she sends each week thereafter to Mrs. B. and others on her list may be printed, the director merely filling in the name of demonstration and date. She must always sign her name. These postals may also be sent to the homes she visits on Home Service calls. In a surprisingly short time the director will build up a personal following that will bring her an unfailing audience for "daily" demonstrations.

There is a personal touch in this little attention that the customer will find difficult to resist, and though she may not come to the demonstration designated on the first card, she will eventually attend. If the director is persistent in sending her weekly notices of demonstrations, I venture to say Mrs. B. will never thereafter call at the Lighting Company's office without stopping at the Home Service kitchen.

At first this audience may seem trifling to demand so much attention, but the "daily" demonstration may be developed into the foremost and most valuable points of close public contact of the utility organization. This is true principally because the directors are trained to render this special, delicate service which not only makes friends of customers but builds the foundation of permanent and priceless good-will. In this "daily" audience alone lives one of the worthy reasons for the existence of a Home Service Department in any and all utility companies. Its importance cannot be too strongly stressed nor its economy of efficiency overlooked.

Greatest enthusiasm usually attends the beginning of any business enterprise. Home Service is not an exception.

Twenty-two Thousand Homes Visited

But when you consider that the Home Service Department of Westchester Lighting Company alone visited 22,000 homes in sixteen months and more than 32,000 housewives attended Home Service lectures, the powerful potentiality of Home Services' building for good-will in any utility company is not to be ignored. What other department of a utility can touch such a tremendous audience in so short a time?

What department is more worthy of careful development—of unstinted effort, not only by its own members but by utility executives? The clientele of a utility company is far different than that of a merchandising house or in fact of any other business concern. The attitude of the utility's public is unique. To deal successfully with gas and electric consumers experience is essential.

Since Home Service is a comparatively new venture it may hardly be expected that the directors brought in to take up this all-important work should know immediately how best to appeal to gas and electric consumers or how to bring about that company-consumer relationship which is so desirable. To place Home Service solidly on its own feet—to give it the chance it deserves—to let it work—the experienced executives of utility companies must stand behind it. They cannot merely organize the department and expect it to bring in tremendous results—results which it certainly is capable of attaining if well managed.

It is for those who have so successfully built up the utilities of the country to relay the benefits of their experience—to teach—to help—to explain. Then and then only will Home Service touch the heights which are surely within its reach.

Westchester Lighting Company believes firmly the best way to hold at least a part of the attention from which to claim an audience is to let the people know occasionally what Home Service is and what it has to offer. A letter by its President, Mr. Eugene H. Rosenquest, placed in all the dailies in the county as a quarter page advertisement had this aim in view.

Have You Met Home Service?

Home Service is progressing. It's field is widening. Have you heard of it? Do you know what Home Service means?

"Service for Happiness" is the slogan which this newest department of Westchester Lighting Company has adopted and it is not merely a happily chosen phrase. It represents highly specialized work of a group of women in earnest endeavor to give something of enduring value to the homes of Westchester County.

Do you know how Home Service helps the overworked housewife—how, by the elimination of the drudgery of housework, it will give you many precioushours of leisure for amusement, for study, and for friendship? Our Home Service Directors will gladly demonstrate for you in your homes the appliances which will save you so much labor. And remember, that to them an audiance of any size whether large or small will be interesting and interested.

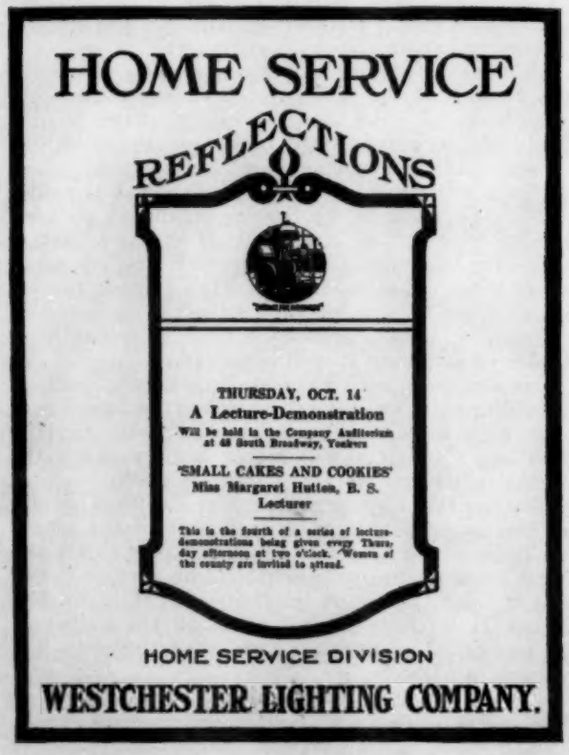
During the sixteen months since the Home Service Division of this company was organized, the department has grown from 2 to 14 directors. Twenty-two thousand homes have been visited and more than thirty-two thousand housewives have attended Home Service lecture demonstrations. These numbers and daily increasing for Home Service is still and will continue to make rapid strides.

The educational work of the Division covers not only cooking problems and the elimination of tiresome hours work but also many other subjects of inestimable value to all members of the family, such as correct lighting, heating, and interior-decoration. Its educational bus, which will shortly begin its tours of the County, will help greatly in spreading the knowledge which every housewife desires.

We urge you! to profit by this service—to welcome it in your homes—to regard our directors as your personal friends in every matter that concerns the household. Ply them with questions. They are willing and anxious to help you and they are well qualified to solve your problems and your difficulties.

EUGENE H. ROSENQUEST,
President Westchester Lighting Company.

Still another means this company has of familiarizing the public with Home Service is to use the same cut always for advertising a lecture demonstration or in fact any of the Home Service activities.


HOME SERVICE
REFLECTIONS
THURSDAY, OCT. 14
A Lecture-Demonstration
Will be held in the Company Auditorium at 48 South Broadway, Yonkers
"SMALL CAKES AND COOKIES"
Miss Margaret Hutton, B. S.
Lecturer
This is the fourth of a series of lecture-demonstrations being given every Thursday afternoon at two o'clock. Women of the county are invited to attend.
HOME SERVICE DIVISION
WESTCHESTER LIGHTING COMPANY.

Even the simplest effort of calling an audience together must have for its backing a fine patience. There must be an unfailing, insistent effort by everyone in the Home Service Department to acquaint the customer with this service, remembering that Home Service is always new to someone and that that someone is needed to make up future audiences. From these audiences will result greater appliance sales for the company, improved public relations and good-will—three proven powers for increasing prosperity of any utility company.

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AN EXCELLENT RECIPE BOOK

Miss Ada Bessie Swan, Home Service Director of the Public Service Electric and Gas Co., Newark, has gotten together in a very attractive form a book of cooking recipes.

These recipes, some thirty in number, comprise those broadcast from the Radio Cooking School.

In addition to the recipes there are embodied in the Recipe Book a number of truly delightful cuts of photographs showing the housewife performing her various household duties in an environment of well equipped gas kitchens, laundries, etc.

The book itself is artistically gotten up, and Miss Swan prefaces the same in a timely, interesting manner.

HOUSE HEATING IN NEW ENGLAND

(Continued from page 38)

Other Savings

Another saving to be considered in this matter is the added space which can be used for living purposes in a gas heated home. The basement, being free from the storage of coal and handling of ashes, is as clean as any other part of the house, and in many cases has been converted into a spacious living room. In the case of rented apartments, it has been found possible in some places to utilize as an apartment the basement which heretofore had been reserved for heating purposes only, the added income from which more than offsets the cost of operation.

The idea of being able to light a fire early in the fall and, without further care, maintain an even temperature during the next 7 months has a strong appeal.

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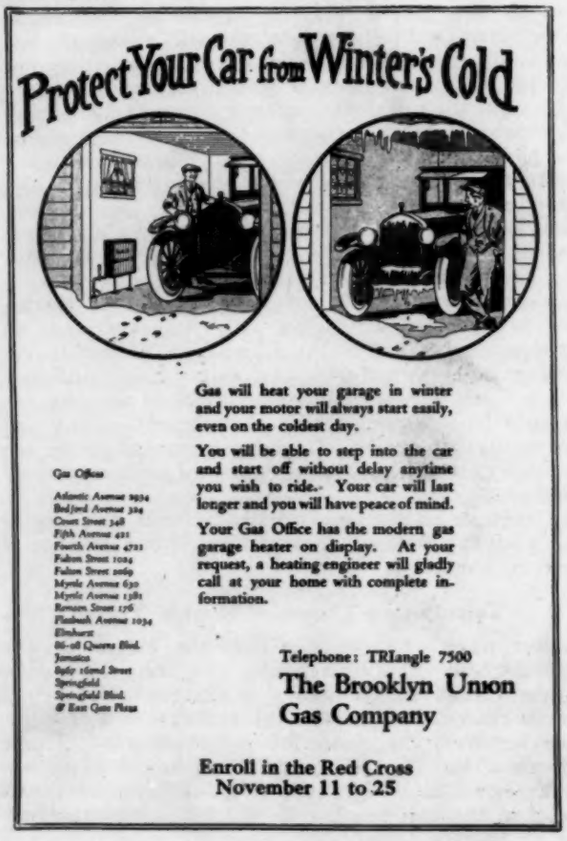
A BUSINESS-GETTING AD

We show herewith a cut that gas companies in general might take a cue from. Many thousands of dollars are spent each year in repairing the ravages of extreme low temperature. It would seem that the proper message to the car owner should be of money-saving service to him. Here is one company which is taking the right publicity method in order to be of real service to the customer and at the same time increase gas consumption.


Protect Your Car from Winter's Cold
Gas will heat your garage in winter and your motor will always start easily, even on the coldest day.
You will be able to step into the car and start off without delay anytime you wish to ride. Your car will last longer and you will have peace of mind.
Your Gas Office has the modern gas garage heater on display. At your request, a heating engineer will gladly call at your home with complete information.
Gas Offices
Atlantic Avenue 3934
Bedford Avenue 324
Court Street 348
Fifth Avenue 421
Fourth Avenue 4721
Fulton Street 1024
Fulton Street 2069
Myrtle Avenue 630
Myrtle Avenue 1381
Remsen Street 176
Flatbush Avenue 1034
Elmhurst
86-08 Queens Blvd.
Jamaica
89th 162nd Street
Springfield
Springfield Blvd.
& East Gate Plaza
Telephone: TRIangle 7500
The Brooklyn Union Gas Company
Enroll in the Red Cross November 11 to 25

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

Lesson No. 151

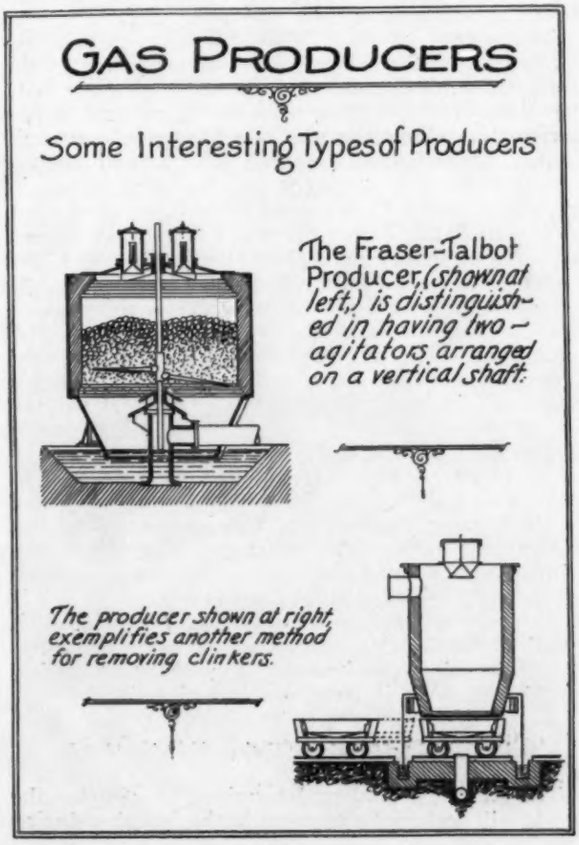
Manufactured Gas

There are many different ways of feeding and raking the producer. There is, first of all, the producer which is both fed and poked by hand. This of course, is a very crude method of operating this apparatus for the reason that it yields a gas of constantly varying thermal value. The hand-poked and the hand-fed producer is a cheaper producer, but in the long run it becomes more expensive because of the labor costs involved. On the other hand, mechanically operated producers are much more expensive, as far as first cost is concerned, but their operation is cheaper and the quality of gas made by them is better. Devices that are used for feeding are generally of the double, hopper type so that the coal or other carbonaceous matter may be fed into the apparatus without causing any interruption of its operation. The raking devices are of many different kinds and are commonly water-cooled, being hollow to allow for the continuous passage of a stream of cooling water. Some of these raking devices are made like an ordinary poker and others are in the form of a rake which travels in a circular path.

Ash Removal

Producers are also distinguished from one another in accordance with the method which is used for the removal of ash. This is an important part of the design of the apparatus. The ash must be removed as quickly and as easily as possible and without disturbing the operation of the apparatus. In some cases the movement of the grate bars results in the removal of ash. There are many producers that have no grate bars, a water-seal being used, with the result that the ash can be removed at all points around the circumference of the producer. The ash can also be removed by hand, but this, while cheaper, possesses all the disadvantages of hand-feeding and hand-poking. In removing the ash by automatic means, two general types of devices are used, one that operates intermittently and the other that operates continuously. The continuous type of ash removing seems to be more advantageous in that it causes no disturbances in the operation and permits the continuous production of a gas of constant composition.

Producers are finally classified according to the cleanliness of the gas that they make. Thus, various purification systems are connected with the producer and these consist of scrubbers and tar separators, which work on principles similar to those used in the manufactured gas works. Scrubbers are generally towers filled with some absorbent substance such as sawdust or glass wool.


GAS PRODUCERS
Some Interesting Types of Producers
The Fraser-Talbot Producer, (shown at left,) is distinguished in having two agitators arranged on a vertical shaft.
The producer shown at right exemplifies another method for removing clinkers.

Sell the Gas Idea to the Universe

The export field is a profitable one for industrial appliances

A. J. Smith

Church View House, Solihull, Warwickshire, England

APPARENTLY the furnace maker of any kind finds it more difficult than any other manufacturer to believe in the possibilities of export business. Asked if it would ever be possible to do a worthwhile export trade in industrial gas equipment, the average maker would probably answer "No," after considering the simplicity of the castings of which the furnace is constructed, its high price compared with its weight, and figuring the amount involved in freight in placing it in any destination overseas. There are jobbing grey-iron foundries, he would argue, in most every country or town where a gas undertaking is established, and firebrick can be bought everywhere! A market survey, if it is conducted on these lines, would indicate very clearly the impossibility of any maker of gas-fired apparatus ever developing any export trade in that product. The conclusion, however, would be wrong, for gas apparatus is being exported to many different parts of the world wherever gas undertakings exist, both to countries which are highly industrialized and to others which are almost entirely agricultural in their pursuits.

The export of such industrial apparatus is not likely to form the subject of any investigation by the Department of Commerce, and its existence is only to be discovered by those who have traveled a few territories selling the gas idea. Strangely enough, highly industrialized countries with a local furnace industry furnish openings for the export of gas apparatus no less than partially developed territories, and immediately before the war I found that at least a couple of British makers were exporting gas-fired furnaces to such a highly developed and highly protected country as Germany, while yet a third maker was selling oil-fired furnaces there, the latter apparatus being of very similar construction and price. In my trips through the Dickens country, I found a factory in Birmingham (England) employing several thousand hands thoroughly sold on the merits of a certain make of American gas furnace, of which there were dozens in operation, while an American make of gas furnace was likewise listed in the catalog of the biggest English machine tool merchants. In the same country, in spite of the local competition, I found one make of French gas burner known as the Meker enjoys a pleasing reputation in most every laboratory where a high temperature is required for heating operations. I have also come across American gas furnaces in numbers in different works in France, in Italy, and in Switzerland.

British Manufacturers Enjoy Export Trade

The American maker determined to conquer the world will find encouragement in the fact that during the past three years on British maker of gas furnaces found it possible to export six of large size to Sydney, (Australia), 40 to France, and about 12 to Holland. During the past few years one entire hardening shop equipment consisting mainly of gas furnaces was imported by the Portuguese Government at a cost of about $5,000, and a slightly larger installation was imported by the Greek Government about the same time. Right now there is about to be erected by one of the South American railroads certain new workshops, and a perusal of the specification of the plant called for shows that the furnace equipment of various kinds amounts to approximately $20,000. Large orders of this kind, it is true, are not everyday happenings, but they do occur sufficiently often to prove that the chores entailed by tilling the foreign field are followed by occasional rich rewards.

Domestic Apparatus

Even in the case of domestic gas heaters, I have found a steady importation of these goes on in Europe, even in countries which by reason of their depreciated exchanges offer difficulties more serious than the normal sales resistence. No one with any personal acquaintance with the type of gas heater which is in vogue in France, in Belgium, in Italy, or in Spain, can doubt that in the future these must be a big market for the artistic radiant heater with which we are familiar, and even during the past few months I have come across instances of the regular importation of gas-fired heaters into Belgium and into France.

Some Exporting Considerations

Considerations which apply to the export of domestic gas appliances do not serve as any guide of what is possible in industrial apparatus, for the former depends greatly upon furnishing fashions and taste, but the latter is judged entirely by price and results. A much better indication of the countries to which it would be possible to export gas furnaces would be found in a list of the destinations to which gas engines are exported in normal times. Such territories present worthwhile openings for gas furnaces, and the trade could in most cases be taken care of by the same distributors.

The demand for gas apparatus cannot fail to grow steadily as more and more of the gas undertakings of the world begin to recognize that in the industrial

demand lies one of their most powerful markets, and take the necessary steps to cultivate it systematically. The intensive efforts of the American undertakings in selling the industrial consumer are beginning to be developed by foreign undertakings, even those in far away Calcutta and Sydney, but much remains to be done before the potential industrial market for gas through the would can be said to have received more than a very slight measure of attention.

Then, too, in different communities local machinery agents and merchants have to be found having an interest in the installation of large gas apparatus of this kind, or else they have to be coaxed and educated into an appreciation of the field which industrial gas offers for service and sales. It must be admitted that agents who already possess the knowledge of gas apparatus are difficult to find, but examples are encountered both in Europe and elsewhere where big sales have been worked up by keen importers, practically without support or encouragement of any kind from the manufacturer.

Manufacturers Must Make Strong Effort

But in spite of all outside aid which may be available whether from gas undertaking or local merchants, the success or failure of any maker in the export field will always depend chiefly upon his own efforts, and it is here that there is room for improvement. There is need for a greater belief in the importance of foreign fields on the part of makers, and a greater readiness to take all reasonable means for cultivating it. I have before me as I write some substantial volumes in which have been bound up together a collection of several dozen catalogs of American gas furnaces, and most of these are so lacking in essential details on weights, measurements, prices, and gas rates as to be practically useless to the salesman or the merchant abroad seeking to estimate his landed costs. Practically all catalogs of gas apparatus whether issued by British, French, or German makers present the same difficulty owing to lack of data, and in the case of distant markets it is possible to waste almost a year in obtaining the necessary data on packing charges, freights, measurements, gas rates, etc. It is only very rarely indeed that the foreign prospect interested in furnace equipment receives a catalog in which all the reasonable requirements of the foreign buyer are provided.

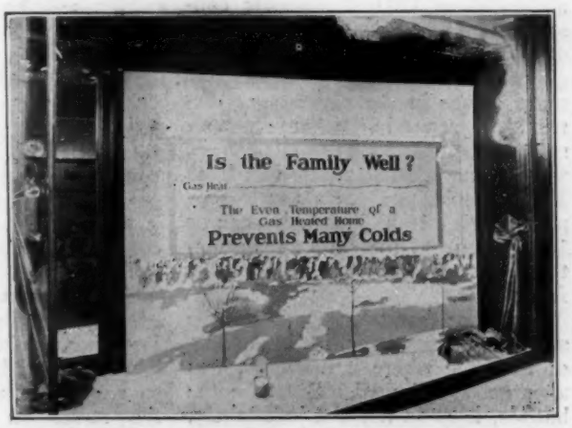
In many overseas markets, it is often not a commercial proposition for a buyer to pay sea freight, duty, and other transit charges upon the quantity of ordinary refractories embodied in the construction of the average large gas furnace, and the maker interested in export markets might reasonably furnish his foreign prospect with alternative prices for such apparatus, one of which should be the figure for the furnace complete, while the other would be for the ironwork only with working drawings to facilitate the erection of the plant with local refractories. Selling literature might be designed to appeal not only to the user of the apparatus, but by featuring what is done in other communities it could also arouse the interest both of overseas gas undertakings and machinery merchants in the opportunities which exist for trade in such plant.

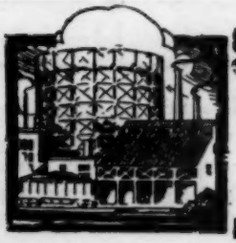
To show the world all the possibilities of gas is a task worthy of our brightest men. Maybe the maker of industrial gas apparatus need not anticipate the output of a Henry Ford, but within reasonable limits there is a worthfhile trade to be done in the product by the manufacturer who is determined to implant his merchandise throughout hitherto unaccustomed trails, sometimes in the most unexpected quarters and against difficulties which at first sight seem to be insuperable; and the maker who could be induced to devote to certain selected export markets for a term of years a small portion of the attention which is normally lavished upon his home trade would soon see by results that certain foreign communities occasionally offer better prospects than his home town.

A Unique Window Display

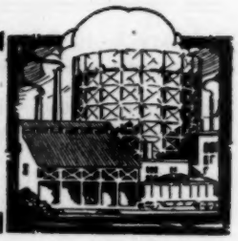
The picture here produced is not a billboard but a model of one made up for use in the show window.

It was displayed by the Portland Gas & Coke Co., Portland, Ore., in its house heating campaign, showing the even temperature running from 68 to 70 degrees, as controlled by the thermostat of a gas furnace or gas-fired boiler, and drew attention to the fact that the even temperature of such a home prevents many colds.





NEWS OF THE GAS INDUSTRY



Manufactured Gas Replacing Natural

Andover, N. Y.—The natural gas companies of New York state and the consumers of natural gas are again facing the winter shortage problem which has become increasingly severe for the past six years.

Numerous up-state cities and towns, among them Buffalo, Elmira, Caledonia and Pavilion, have had to increase available supplies of natural gas by the addition of manufactured gas. A recent announcement adds to the list a new pipe-line 25 miles long from Tonawanda via Akron and Attica to Clarence. This main will supply the communities along its route with what natural gas is available and will mix with this supply about one million cubic feet of manufactured gas a day. A gas manufacturing plant is being built also at Hornell in Steuber. county.

The shortage of natural gas and the increasing demand has made it necessary for the Public Service Commission at various times since 1920 to protect domestic consumers by restricting the industrial use of the fuel.

A survey of New York State shows about 170,000 domestic consumers of natural gas and less than 400 industrial consumers, making the shortage fall with peculiar severity upon homes in the natural gas district. There are in the state approximately 2,000 natural gas wells. These, with the natural gas pumped in from Pennsylvania, produce a yearly supply of about 15 billion cubic feet, or 13 per cent of the state's manufactured gas supply of 110 billion cubic feet a year.

For more than two generations the supply of natural gas, in those parts of the state where it occurred, was apparently unlimited. But, like the buffalo, it could not last indefinitely, and increasing demands for gas and increasing uses have made a new source of supply imperative. The gas companies are, therefore, turning to manufactured gas as rapidly as possible to assure consumers a steady and adequate gas service.

The first use of natural gas in the United States was in 1826, at Fredonia, in Chautauqua county, New York. In that year General Lafayette made a tour of the country. To celebrate his stop at Fredonia a well was drilled into a gas pocket and a lead pipe was used to carry the gas to the local tavern. The brilliant light produced by the new fuel was remarked upon by General Lafayette and recorded in his journal.

* * *

Use of Gas Jumps 30 Per Cent When Cold Wave Comes

Everett, Wash.—The consumption of gas in Everett increased 30 per cent during a recent cold spell. This was partly due, in the opinion of Clarence Lasher, local manager, to the fact that houses warmed by gas furnaces used more, while others whose plan of heating failed for one reason or another kept their gas ovens in use to provide heat in the home.

"Those who heat with gas have not suffered the slightest inconvenience during the cold spell," said Mr. Lasher, "and while we have had some additional service calls, we were ready to meet them.

"When that hail storm came," he continued, "we got ready for more cold, accepting the hail as a warning it was coming. We anticipated the cold wave and were ready to meet it."

Speaking about the increased use of gas, Mr. Lasher said they were installing a light way for Snohomish. The principal block in that town is so augmented with gas as to make the street an attractively lighted thoroughfare.

Good News for Users of Gas—Special Low Rate for Heating Purposes

Ridgefield Park, N. J.—Public Service Electric and Gas Company filed recently with the State Board of Public Utility Commissioners at Trenton a new uniform rate covering gas used for house heating which will materially lower the cost of gas for this purpose. The new rate applies to and is intended to further popularize the use of gas-fired house heating apparatus, which has already met with favor.

The new rate becomes effective with bills rendered after January 1, 1927, such bills covering gas consumed between the December and January readings of meters. It is available to customers using gas in a central heating plant.

At the same time the company filed an amendment to its uniform rate for gas, which provides that customers shall guarantee a minimum monthly bill of $1.00 per installation or meter. No other change in rates is made.

* * *

Public Utility's Task, Once Begun, Can't Stop

New York City.—"A public utility, having started, cannot stop. It cannot close down for repairs or for any other cause, and must always be ready to serve," according to George B. Cortelyou, president of the Consolidated Gas Co. of New York, who is quoted by the New Jersey public utility information committee.

"Unlike other industries, our utilities must accept all business that is offered," said Mr. Cortelyou. "They cannot choose their customers; they cannot place any limit upon the demand for their product, but must supply that demand without notice.

"They must be prepared not only to meet today's needs but must also provide a reserve against tomorrow's. They must cultivate the good-will of the public, first by deserving it through good service and then by advertising the fact."

Equitable Meter Company Takes Up Foremanship Study

Pittsburgh, Pa.—A training group recently organized by a member of the staff of the Department of Engineering Extension is described below and is typical of the work which Penn State has been doing in this respect in the last few years.

Professor Young met officials and foremen of the Equitable Meter and Manufacturing Co. in Pittsburgh early in the month and organized a foreman training group for the concern.

Following the usual procedure, which provides for members of the company's staff to handle the local aspects of foremanship problems, the leaders for the first meeting on the "Responsibilities of the Foreman" were L. A. Dixon, the Works Manager and Mr. W. F. Rushwell. Subsequent meetings will be led by Mr. L. M. Zimmerman, assisted by Mr. F. N. Newton, and by Messrs. H. W. Snyder and White. The lecture service of the Department of Engineering Extension will probably be utilized also.

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New Owners for Gas Company

Seaford, Del.—The transfer of a majority of the stock of the Sussex Gas Company, this town, was recently made in Philadelphia at the office of Henry M. Tracey, secretary-treasurer, to the Consolidated Gas Service Corporation, of Wilmington, and the latter company assumed charge of the plant right away. The deal for the plant had been under way for the past six months. The new owners own a fine office and show room here at the corner of High and Conwell streets, which they purchased from the Delaware Trust Company and remodeled. It is said the present name, Sussex Gas Company, will not be changed by the new owners. The headquarters of the company are located at Seaford. The plant furnished gas for cooking, lighting and heating to the towns of Seaford, Laurel, Bridgeville and Blades. C. P. Holzderber, of Wilmington, is president of the Consolidated Gas Service Corporation.

Gas Co. Plans Distinctive New Building

Hartford, Conn.—A new and distinctive note will be added to Hartford's downtown business architecture during the coming year, when the new three-story office building of the Hartford Gas Light Company is completed. Two buildings on the south side of Pearl street, between Ann and Trumbull streets, have been razed and the foundations for the new structure are already laid. Buck & Sheldon, Inc., of Hartford, are the engineers and architects. The general contractor will be selected next week by company directors from a list of concerns who have submitted bids.

In style the building will be Romanesque, of the period when the Lombard, whose exact origin is lost in antiquity, developed toward the Orient from Lombardi into Byzantine and toward the Occident into Romanesque to attain in central Italy the reborn refinements of the later evolved Italian Renaissance.

It will be three stories and a basement high, including two mezzanine stories and cover an area about eighty-seven feet square on a corner lot of eighty-seven feet front on Pearl street by ninety-two feet deep. The structural material will be steel, reinforced concrete, tile and brick. The exterior surface materials will be light toned face brick, bronze, granite, wrought iron, roof tile and marble. The interior materials will include marble, bronze, quarry tile and ornamental plaster.

The exterior walls of the basement, first story and second story will stand on the lot lines, excepting portions of the rear wall, which will stand eight feet within the south lot line and effect a clearance for light courts. The third story walls are to set nine feet back of the lower story walls, affording a wide deck or terrace and a relatively softened sky line.

Being dedicated to the individual use as the commercial home of the Hartford Gas Company, the building is conceived to express as much distinctively domestic character in its proportions as its commercial requirements will permit. It will not pretend to compete in character with the modern commercial "skyscraper," but rather will express the intimacy of the home of a distinctive resident.

For its proposed uses, the plan provides: An unusually high basement for storage and moderate display of special merchandise; public toilets, the heating and ventilating plants and other merchanical appurtenances, such as flood pumps, etc. The heating plant will include gas fired boilers so located that the public will be enabled to see them in operation. The first floor will provide a twenty feet high show room of approximately 5,000 square feet, lighted by two show windows twenty feet wide, the entrance bay glass screen and two smaller show windows fronting on Pearl street, and a twenty feet wide show window returning along the east front. At the rear of this show room the public counters, elevator, staircase and president's office will be located. Above them, on a mezzanine floor, will be the general toilets, ladies' rest room and lockers for the clerical personnel. The second floor will provide a work space of 5,000 square feet, lighted on the east, north and west sides for accommodation of department principals and personnel. Back of these are to be the executives' offices, staircase and elevator. The third floor will be similarly arranged, with the added feature of an outside terrace extending around three sides of the work space.

The main store entrance and exterior lanterns are to be of ornamental bronze and glass, with a bronze and glass dome surmounting the central entrance, and two richly decorated bronze columns, with capitals and bases ornamented in low relief, flanking the entrance bay. A separate staircase will connect basement and first floor; a general interior fireprotected staircase will extend from first floor to roof and an open exterior emergency stairs from sidewalk to roof.

The building will be mechanically ventilated, electrically lighted and steam heated, with thermostatic control. There will be one electrically operated and automatically controlled passenger elevator.

Binghamton Gas Works Applies for Permit to Extend Mains in Union

Binghamton, N. Y.—The Binghamton Gas Works today made application into the Public Service Commission for authority to extend its gas distribution system from the end of the main in Johnson City into the town of Union and supply residents of Westover and Endwell with gas. The company was granted a franchise by the Union Town Board on December 2.

* * *

Digs Gas Well in Yard, Laughs At Collectors

Independence, Mo.—E. C. Hamilton, east of Independence, Mo., decided he wanted a gas well, so he went out into his yard, about fifty feet from his house, and dug one. He got a dandy, with pressure at 475 pounds. He cased the well and is piping the case to his house, where he is making good use of it. He heats his furnace with it and uses it for cooking and lighting. He believes that, using the product of the well only for his own use, it will last indefinitely. So now he does not have to bother about a coal strike, gas bills, or those bill collectors from fuel companies.

* * *

Bridgeton Gas Light Co. Record of 69 Years Service

Bridgeton, N. J.—The Bridgeton Gas Light Company has just entered upon its seventieth year of business, with a record of sixty-nine years of uninterrupted service to the public. Not once in that span of years has the gas service failed.

Edward Woodruff lighted the first gas jet in Bridgeton at 7.23 in the evening on November 15, 1857. He was held up to the lamp in the arms of his father, Uriah D. Woodruff, first president of the Bridgeton Gas Light Company. The house that sheltered the first light still stands and the light bracket is in the gas company's office.

The present officers and board of directors are: Bloomfield E. Minch, president; William C. Mulford, secretary and auditor; Jacob B. Jones, superintendent and treasurer; Edward P. Bacon and Joseph H. Powell, directors.

Only Remaining Municipal Plant in Wisconsin Sold

Ft. Atkinson, Wis.—The way has been cleared for the purchase of the only remaining municipally owned gas and electric plant in the state of Wisconsin. The people of the town of Fort Atkinson voted on the offer made by the Wisconsin Gas and Electric Company at a recent election, and the result was an acceptance of the purchase price offered.

The company will now take over the plant and operate it as a subsidiary.

Statistsics prepared by the American Gas Association show that there is a distinct trend toward the abolition of municipally owned utility plants, the public evidently feeling that private ownership and management results in better service.

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Richmond Plant Is Sold

Richmond, Ind. — The Richmond plant of the Indiana Gas Utilities, Inc., has been acquired by the Associated Gas and Electric Company, says an announcement, making the third transfer of the local utility within a comparatively short time.

* * *

Gas Company Adds 20,946 Feet of Gas Mains in 1926

Fond Du Lac, Wis.—A total of 20,946 feet of gas main was laid in Lond du Lac and North Fond du Lac during the past year by the Wisconsin Power and Light Co.

Central Florida Spending Large Sums on Gas Development

Orlando, Fla.—The unmistakable growth, development and expansion of this section of inland Florida is reflected in statistics compiled by the Florida Public Service Company for Orlando, Eustis, Lake Wales, DeLand and intermediate points, which this year expended more than five million dollars in improvements for 1927 plans an expenditure of $5,000,000. In November the territory covered by the company took on 1,203 new customers, a net increase over November, 1925, which was supposed to have been the biggest year in the history of this section. In Orlando alone gas customers showed an increase of 42 per cent. In 1925 the company had 3,492 customers, while in 1926 the total soared to 4,969. The gas department in its meter budget for 1927 will expend $53,000, last year the total being $31,000.

Realizing the possibilities for new industries in central Florida, and believing in the future development of this section of the state, the Florida Public Service Company has announced that it will expend about $5,000,000 during 1927 on its public utility properties.

Effective December 1, the public service company made a reduction in industrial gas rates. This rate affects all large consumers of gas who are now on the company lines or who may later desire gas service. Among the changes in this rate is the step from 50,000 to 100,000 cubic feet per month at the rate of $1.25 per thousand. The step of 100,000 cubic feet per month will be figured at the rate of $1.10 per thousand. This is quite a reduction and a rate which will be attractive to large gas consumers. This reduction on the part of the public service company is entirely voluntary, as they appreciate the fact that large customers are entitled to a cheap rate and the company is willing to make this reduction to benefit industry.

The radical reduction in the gas rates for industrial and commercial enterprises using over 50,000 cubic feet per month was made, according to officials of the company, in an effort to make this section attractive to industries that use gas in large volume and at the same time to permit a saving for present consumers. The Orlando gas plant was remodeled and the capacity greatly increased during the summer months of 1926, thereby providing the city of Orlando with adequate capacity, so that all of its present customers and future consumers and industrial establishments might be served with dependable gas service.

The U. G. I. Contracting Co. Activities

Syracuse, N. Y.—The Syracuse (N. Y.) Lighting Co. has placed orders to furnish and install a complete coke screening plant in conjunction with the vertical retort plant at their Hiawatha Avenue Station.

This installation will include the necessary crushers, conveyors, housing, motors, belts, etc., for the system.

Salisbury, Md.—The Citizens Gas Company has lately improved its purification plant by the installation of additional purifiers.

Minneapolis, Minn.—Contract has been received from Minneapolis Gas Light Company to remodel four 11 ft. sets and two 10 ft. 6 in. sets of carburetted water gas apparatus. The contract calls for bringing these sets up to date in every particular, including hydraulic operation. Six U. G. I. Model B Automatic Controls will also be installed on the sets.

Derby, Conn.—The Derby Gas & Electric Co. is making improvements to its plant and is having remodeled the 7 ft. 6 in. carburetted water gas apparatus, as well as providing additional parts and connections.

Brooklyn, N. Y.—One of the latest gas companies to adopt the Cottrell Electrical Precipitation System is the Brooklyn Union Gas Company, which has contracted for this system to be installed at the Williamsburgh works.

The Cottrell System is being favorably received by gas engineers and other recent installations have been made at Moline, Ill.; Racine, Wis.; Evanston, Ill., and New Orleans, La.

Wilmington, Del.—The Wilmington Gas Company is preparing to make extensive improvements at their plant in Wilmington, Del., in order to take care of the increased consumption due to the growth of that city. They have contracted for the installation of additional works equipment which will include U. G. I cone top carburetted water gas apparatus capable of increasing their manufacturing capacity by 3,500 M. cu. ft. per day.

Included with the apparatus will be complete hydraulic operation of all valves, exhaust steam system, steam accumulator and back-run connection. The apparatus will also be equipped with the U. G. I. Model B Automatic Control, which will eliminate the necessity for manual labor and operate the apparatus accurately and efficiently.

Additional orders have been placed for fuel handling equipment and 30 in. welded steel take-off connections.

The work is to be finished in time to take care of next summer's load.

Dr. Lyon, Well Known Physicist, Passes Away

The passing of this well-known physicist and inventor deprives the gas industry of one of its ablest workers—one who gave generously of his time and talent. Dr. Lyon died at his home in Gloucester, New Jersey, where for the past seventeen years he was engaged in research work for the Welsbach Company. During this time Dr. Lyon contributed many valuable inventions and improvements in gas lighting and heating.

DR. HOWARD LYON

After graduating from Harvard, Dr. Lyon spent several years as instructor in science at the State Normal School, Oneonta, New York. He also lectured at the Case School of Applied Science, Cleveland, Ohio.

Dr. Lyon was a member of the Illuminating Engineering Society, serving in various capacities in connection with committee, section and national organization activities. At the time of his death Dr. Lyon was secretary of the Committee on Nomenclature and Standards. He at one time was chairman of the Philadelphia section and was serving on the board of managers of this section when he died. Dr. Lyon filled the office of director of the national society from 1923 to 1926.

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Construction Begun on Largest Gas Carrier in West

Los Angeles, Cal.—Interests controlling the Southern California and Midway Gas Companies, in conjunction with Southern Counties Gas Co. and Los Angeles Gas and Electric Corporation, have begun construction of the most important gas transmission project ever undertaken in the United States.

In order to prevent the possibility of any gas shortages in the communities these companies serve, a 15-inch high pressure pipe line, 75 miles in length, is being built to carry natural gas from the highly productive Ventura Avenue Field to the City of Los Angeles. A new corporation, the Ventura Fuel Company, has been organized to carry out this project, with A. C. Johnston, assistant treasurer and comptroller for the Southern California and Midway Companies, in charge of the new company's Los Angeles office.

The Midway Gas Company is supervising the erection of the compressor station and equipment at Ventura, while Southern Counties Gas Company is in charge of pipeline. According to A. B. Macbeth, executive vice-president of the Southern California and Midway Gas Companies, who is also president of the American Gas Association, the new line will be the largest gas carrier in the West. Its capacity will be approximately forty-five million cubic feet of gas a day.

* * *

Breaks All Records in Gas Water Heater

Wilmington, Del.—The past year has been a record-breaker in the sales of automatic hot water heaters, according to officials of the Wilmington Gas Company. Some idea of how this household necessity is growing may be gained from the fact that in December alone more gas fired automatic water heaters were sold in this city than during the entire year of 1925.

City of Huntington Beach Concludes That Municipal Ownership Is Not Profitable

Huntington Beach.—A special election to determine whether or not the voters of this city wish to sell the municipal gas system was ordered in an ordinance read before the city board of trustees. The date for the election was not set. Drafting of the ordinance followed an offer made to the city by J. M. Berkley, consulting engineer for the Southern Counties Gas Company. The gas company made the city an offer of $75,000 cash for the municipal system.

Decision to place the situation before the voters of the town was reached only after many special meetings and much consideration on the part of the board of trustees, it was declared by O. G. Boster, president.

Boster pointed out that since oil has encroached on the city many thousand cubic feet of gas lines have been abandoned with a big loss to the city. Houses are being moved to different portions of the town and new lines will have to be laid, which will cost the city approximately $75,000, which must be voted at a bond issue, he said. In three and one-half years the city's contract with the Southern Counties Gas Company will expire and the city will be forced to build gas-storage tanks, which will cost approximately $50,000, he pointed out.

The mayor also declared that the gas rate in this city is higher than the rate charged by the Southern Counties Gas Company. Berkley, on behalf of the gas company, pledged the gas company to furnish gas to Huntington Beach at county rates, which would be about 12 cents per 1,000 cubic feet less than the citizens are paying at the present time.

The city gas system is paying the city about $100 per month, according to Boster. He pointed out that this was due to the high rate charged.

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Gas Machinery Co. Increases Sales Force

The Gas Machinery Company of Cleveland, Ohio, has increased its sales force by appointing Messrs. Clarence H. Hale and William Steinwedell as sales engineers.

William H. Taylor Appointed Vice-President of the U. G. I. Co.

William H. Taylor has been appointed a vice-president of the United Gas Improvement Company, an additional position having been created, according to announcement recently made by Arthur W. Thompson, president of the company. He will assume his new duties February 1.

Wm. H. Taylor

Mr. Taylor is 47 years old and has had long experience in public utility work. He has been connected with U. G. I. properties for more than 23 years. Mr. Taylor has been operating head of U. G. I. plants in Gloversville, N. Y., Charleston, S. C., and Omaha, Nebraska.

Since 1922 Mr. Taylor has been vice-president and general manager of the Georgia Railway & Power Company, with headquarters in Atlanta. He is a graduate of Stevens' Institute of Technology and an engineer by profession. He began his active career in 1903 as a constructor with the U. G. I. engineering forces. He has risen step by step through the engineering, management and construction departments to the position of vice-president and general manager of outlying properties.

"Mr. Taylor receives recognition of his ability and accomplishments in being brought to headquarters of The United Gas Improvement Company," said President Thompson. "His offices will be in the central U. G. I. building at Broad and Arch streets."

MASSACHUSETTS TECH GETS GIFT OF $100,000

Aldred Is Donor of Cash for Municipal-Industrial Research

As a result of his experience with the industrial survey of Baltimore, made some years ago at his suggestion, J. E. Aldred, chairman of the board of the Gas and Electric Company and of the Pennsylvania Water and Power Company, has made a gift of $100,000 to the Massachusetts Institute of Technology to establish a division of municipal and industrial research.

In connection with the inauguration of this new work the following announcement was made in Boston:

"Organization of a division of municipal and industrial research at Massachusetts Institute of Technology, for the application of engineering knowledge to the problems of government, industry and commerce, in the interests of social and economic growth and progress, was announced by President Samuel W. Stratton. The new division is said to be the first of its kind established in an educational institution."

The work of the new division is expected to widen the engineering field by giving definite recognition to the important contributions which engineering, economic and statistical knowledge may make in government administration, social and business life, directly affecting the comfort and convenience of the public.

Has Large Program

Undertakings in prospect for the new organization include surveys of industrial developments, rail and water transportation facilities, studies of raw materials, products and markets, power facilities and the serious problem of urban and interurban traffic regulation in relation to social and business activities.

In its service to governmental units, including states, counties, cities and towns, the division will cover the broad field of public works with problems of city and town planning, traffic regulation, zoning and the relation of municipal facilities to industrial and social expansion.

Solution of these problems, it was pointed out, must be based upon actual surveys or what might be termed community "assays" of actual conditions in each particular case, and it is such surveys the new division will undertake.